

TECHNOLOGY DEPT.

The

Refrigeration Service Engineer

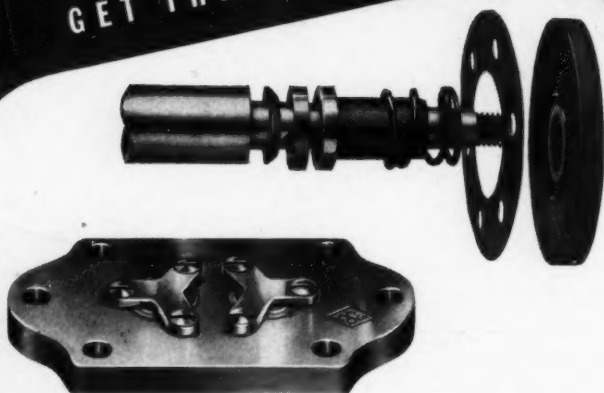
MAY

MAY

1 9 4 6

Vol. 14 No. 5

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 20 NORTH WACKER DRIVE
 CHICAGO, ILLINOIS



The Ansul Research Staff

REPORTS ON:

SLUDGES

Approximately 90% of the sludges produced in refrigerating systems are due to moisture. The exact cause can always be determined by analysis, but the appearance of the sludge (see photos) is usually indicative of the cause.

SLUDGE DERIVED FROM MOISTURE—

If water is present in a machine, the nature of the sludge depends upon the type of refrigerant and length of time the water is present. All refrigerants ... sulfur dioxide, methyl chloride, Carrene and "Freon-12" ... react with water to produce corrosion products characteristic of each. To prevent sludge, the amount of water present in a refrigerating system must be small enough to avoid ice separation and corrosion. For "Freon-12" and methyl chloride, a quantity of water approximately .05% by weight will cause corrosion; the limit is somewhat higher for sulfur dioxide.

SLUDGE DERIVED FROM OILS—

Oil sludges are characterized by total or partial solubility in carbon tetrachloride, gasoline and similar solvents. It is generally presumed that oil sludges are due to two causes: (1) an interaction between the unsaturated constituents of the oil and the refrigerant; (2) a breakdown of the oil due to heat, oxidation, friction, etc.



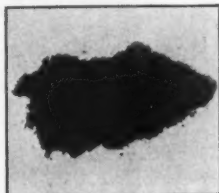
**SEND FOR
"SLUDGES"**
by Ansul
Research Staff
A detailed analysis of the refrigeration sludge problem.

ANSUL WHOLESALERS are ready and equipped to render an intelligent, co-operative service to refrigeration engineers and maintenance men on problems which arise from time-to-time in the operation of refrigerating systems.

FOR EXAMPLE:

Samples of ice machine oils, submitted by users of Ansul Refrigerants to Ansul Wholesalers, are tested by Ansul laboratories without charge by the Ansul Standard Wax-Oil Separation Method. This approved method, developed and standardized especially for use in connection with oils used in refrigerating systems, provides an accurate determination of the amount of wax which separates from an oil at low temperatures.

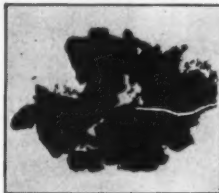
Ansul Refrigerants are available at leading wholesalers everywhere.



GRANULAR SLUDGE
... due to moisture



FLUID SLUDGE
... due to oil



HARD SLUDGE
... due to moisture and oil



*REG. U. S. PAT. OFF.

ANSUL CHEMICAL COMPANY

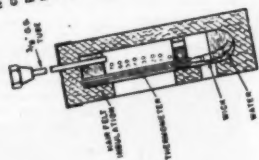
REFRIGERATION DIVISION, MARINETTE, WISCONSIN

DISTRIBUTORS FOR KINETIC'S "FREON 11" "FREON 12" "FREON 21" "FREON 22" AND "FREON 113"

DOUBLE EVACUATION METHOD OF DRYING

No. 10 of a Series

When drying a refrigeration system by this method, a vacuum indicator, bulb thermometer with its high vacuum scale, and a wet bulb thermometer are connected in distilled water, is connected to the vacuum pump suction line. The thermometer will register the boiling temperature of the water in the system.



Wet bulb thermometer vacuum indicator.

Water, like the well-known refrigerants, has a characteristic pressure-temperature relationship. With a very low absolute pressure (high at 35°F and by the use of a high vacuum with all parts of the system at or near 0°F) a temperature difference between room and suction line peratures can be established which will allow sufficient heat to flow into the system. At low rate since a slow rate evaporate, a large quantity of water to evaporate is indefinite.



A typical dehydration with vacuum indicator readings plotted against time.

Assuming the pressure to be due entirely to the wet vapor remaining in the system, the residual gas density which this vapor represents can be calculated as 29.47 lb per cu ft at 2035 in. Hg. The point at which this vapor is admitted to the pump is running at 2035 in. Hg. which is equivalent to 2.37 grains of moisture per ft. of air. If the system is opened at the point at which the pump and air is admitted, the pump will instantly 5.3 grains of average effect.

Space limitation prevent giving the full text of this service bulletin illustrated page. The service bulletin is complete. Write for your copy.

enclosure on request. Write for your copies.

Write FOR YOUR COPY OF THIS SERVICE HELP

This is the tenth of a series of service bulletins, published by Detroit Lubricator Company. They are printed on 8 1/2" x 11" paper, punched for a standard loose leaf binder. Copies may be had on request. Write for yours.

Note these "DETROIT" Features of Solenoid Valves



POWERFUL—Ample power to lift against high pressures.



QUIET—Design of plunger and guide tube minimizes objectionable a-c hum.



EASILY INSTALLED—Substantial mounting boss on valve body makes for easy, rigid installation.



EASILY SERVICED—Can be disassembled and cleaned without disconnecting refrigerant lines or wiring.



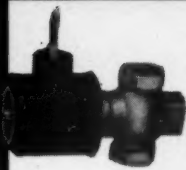
POSITIVE CLOSING—Non-magnetic needle and seat and strong "kick-off" spring assure tight closing.



LONG-LIVED—Valve bodies are of close-grained, non-porous cast brass. Coils are of moisture-proof construction.



ECONOMICAL—Draw little current. Replacement parts if required are inexpensive. Specify "DETROIT" Solenoid Valves.



No. 482-3—This reliable valve, like all "Detroit" solenoids, is designed for use with any fluid that will not attack brass. Furnished with three sizes of orifices, 3/16", 1/8", and 7/32".

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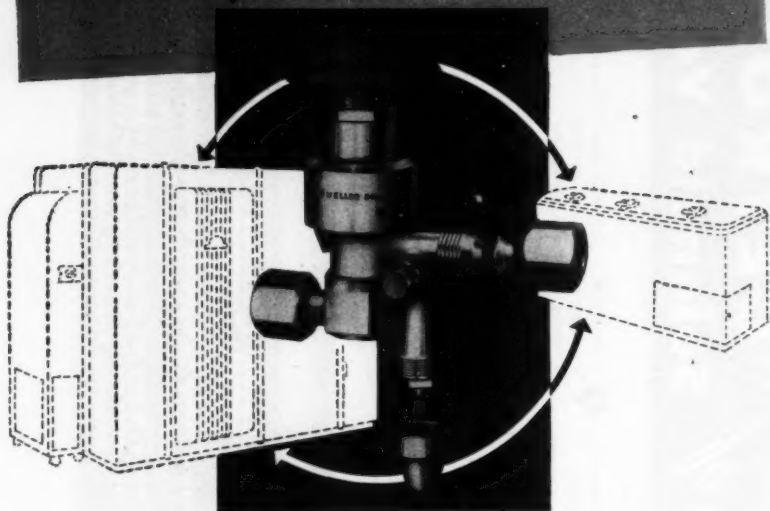
Division of AMERICAN RADATOR & Standard Sanitary Corporation

Canadian Representatives: Railway and Engineering Specialties Limited, Montreal, Toronto, Winnipeg



"Detroit" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators

MUELLER BRASS CO. *Two-Temperature Control Valve*



The Mueller Brass Co. Two-Temperature Control Valve is used in a refrigerating system where one compressor cools more than one unit and where it is desirable to more accurately control temperatures in the various units. It closely maintains a pressure in the coil at a level above the operating pressure of the machine.

An exclusive feature of this valve is the provision for by-passing the automatic valve in case it is desired to pump all the refrigerant from the coil. By means of this by-pass arrangement, the automatic valve can in effect be cut out of the system and the coil

opened directly to the suction line. Provision is also made for the attachment of a pressure gauge while the line is under pressure.

There is no limit to the number of valves that can be installed on one system. When several boxes are to be maintained at different temperatures, the Two-Temperature Valves are installed on the higher temperature units.

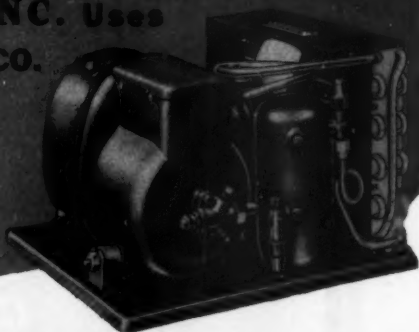
An oval handle, which is independent of the automatic closing feature, provides manual closing and eliminates the use of a separate line valve.

Valves are furnished $\frac{1}{2}$ " and $\frac{3}{8}$ " flare.

MUELLER BRASS CO.

PORT HURON, MICHIGAN

SERVEL INC. Uses MUELLER BRASS CO. PARTS IN THEIR SUPERMETIC CONDENSING UNITS



A MODERN PRODUCT STANDING ON A FOUNDATION OF 25 YEARS OF FIELD EXPERIENCE

The factory-sealed steel case Serval Supermetic will be offered in ten or more models covering all popular applications in the fractional horsepower field. These comprise reciprocating-type compressors directly connected to the most modern type of electric motors. The power units (motor-compressor assemblies) are encased in a welded steel shell for permanent protection. The power unit is mounted with the condenser, receiver, fan motor, and accessories on a rigid steel base completely

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SERVEL INC. Evansville, Indiana

These Products

MUST BE GOOD!

BUILT-IN QUALITY

TIME-TESTED PERFORMANCE

Mueller Brass Co. Valves, Fittings and accessories are sturdily and dependably built. They have a well-earned reputation for built-in quality and time-tested performance.

The Mueller Brass Co. line of refrigeration products is exceptionally complete, and all products are designed and manufactured specifically for mechanical refrigeration work. THEY ARE USED BY ALL OF THE LARGEST MANUFACTURERS THROUGHOUT THE UNITED STATES.

OBVIOUS CONCLUSION: Mueller Brass Co. products must be good!



MUELLER BRASS CO.
PORT HURON, MICHIGAN

Double Feature!

TODAY AND
EVERY DAY

THAWZONE

PATENTED

The PIONEER FLUID DEHYDRANT

1. New or reconditioned units, before starting up, should have THAWZONE for those tiny amounts of moisture that even careful workmanship cannot always avoid. THAWZONE destroys them promptly and stays to prevent future trouble.

TRACE

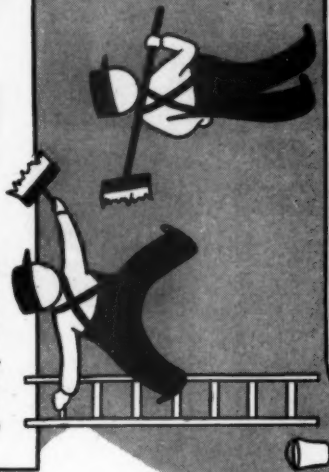
REFRIGERANT
LEAK DETECTOR

Add TRACE at any time to any refrigerant to:

them promptly and stays to prevent future trouble.

THAWZONE now to prevent future moisture. It's economical insurance.

3. Units kicking up from moisture have been treated with THAWZONE by engineers for eight years. It's still good practice.



Add TRACE at any time to any refrigerant to:

1. Find present leaks.
2. Spot future leaks.
3. Locate the source (leaks) of moisture troubles.

TRACE has that vivid, stay-red color. It's manufactured by chemists with long experience in refrigeration, who understand the special and exacting requirements that must be met by any additive to a refrigeration system.



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METHYL
CHLORIDE**

**99.5% PURE
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Residue on Evaporation ... 0.01% by wgt. max.
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Color water white, clear

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ELECTROCHEMICALS**



BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY



ear to the ground ...

... eye to the future



Keeping an ear to the ground has enabled Kold-Hold Engineers to fully satisfy changing refrigeration needs for over a decade in the transportation and storage of perishable items. With an eye to the future, Serpentine Plates have been developed to provide a more satisfactory, modern, low cost method of protecting perishable goods through complete processing between the farmer and consumer.

The construction of Serpentine Plates eliminates the necessity for internal tubing, thereby decreasing their weight per square foot. It also insures complete refrigerant circulation through all tubes and prevents oil logging. The Serpentine Principle develops the highest rate of heat acceptance ever attained with natural convection lowsides.

Whether used as Plates, Banks of Plates or Fabricated into Stands or Liners, Serpentine Plates have unlimited possibilities in the development of newly designed units. In addition they are also ideal for the conversion of old cabinets, coolers or fountains.

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Keeping an ear to the ground and an eye to the future through use of Serpentine Plate Type Evaporators will build greater profits for you through more satisfied customers . . . less spoilage . . . and lower operating costs. Write today for full information on these modern refrigeration methods.

KOLD-HOLD

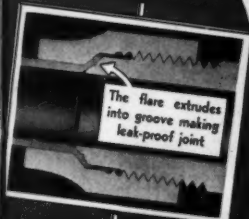
KOLD-HOLD MANUFACTURING COMPANY

502 N. Grand Ave. Lansing 4, Michigan



Here is the groove in Imperial Triple-Seal Fittings that brings you new, extra protection against leakage in refrigeration tubing connection work. When the flare is drawn up against this groove the copper tubing is extruded into the groove making a tight, Triple-Sealed joint. This joint will remain LEAKPROOF even though the face of the seat may be nicked or marred.

Flats are placed on elbows and tees. This gives a wrench hold, eliminating the possibility of distorting the body in gripping the fitting, and also speeds up work materially.



The flare extrudes into groove making leak-proof joint



The threads and seats of Imperial Flared Fittings are protected against possible damage before use by a protecting sleeve as shown here.



Tees, nuts, elbows and crosses are made from brass forgings. This assures a fine grain structure, freedom from internal stress and high tensile strength. Female couplings and cap nuts are made from extruded bronze rod not subject to season cracking.



When you use
IMPERIAL
TRIPLE-SEAL Flared Fittings
you get all
these important features



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SERVICING THE DFN SYSTEM IS A MATTER OF MINUTES

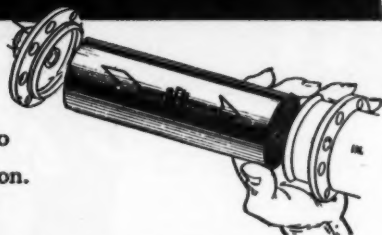


Just open a flange—remove old cartridge—
slip in a new one—bolt it up.



YOU HANDLE ONLY ONE PART ...The DFN Cartridge

It is ready-to-use. Drying agent,
strainer and filters are all factory-
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• In addition to fast, easy servicing,
DFN is the only *complete* system of
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Its exclusive strainer-filter assembly

holds more sediment without pressure
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system or write for Catalog R-7.

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DEHYDRATORS • STRAINERS





FILTERS • NEUTRALIZERS

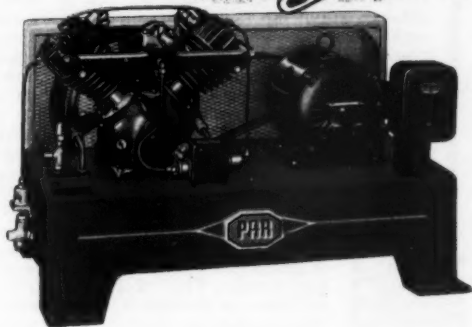
Balanced Performance

In **PAR** there's more
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 Compare... know what's
 on the inside... know
 why it pays to buy **PAR**!

PAR BY Lynch



OFTEN the things that count most are those you can't see, that's why it pays to compare. In **PAR** you find sturdy construction . . . economical dependable performance . . . plus many exclusive **PAR** features that give extra years of efficient, trouble-free service.



COMPARE—know the big difference—see your Par Jobber today or write for Par Catalog R-97.

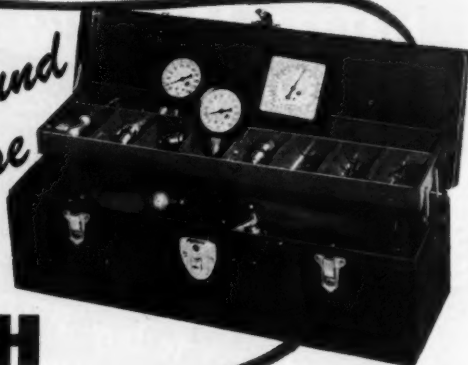
PAR—Condensing Unit Line sold exclusively through Franchised Refrigeration Supply Jobbers!

Lynch

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Manufacturing Corporation

TOLEDO 1, OHIO, U.S.A.

*You're sure
of your ground
when you use*



MARSH Instruments

Marsh Instruments—the
heart of the tool kit.

The diagnosis of refrigeration ailments can be no more accurate than the instruments used in making it. In determining the troubles accountable for 95% of all servicing calls, the vital instruments are pressure gauges and thermometers, and the Marsh line offers you these instruments in the most accurate and usable forms.

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Marsh Refrigeration gauges are known for lasting accuracy—the ideal gauges for checking head pressures, suction pressures, and switch settings.

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Compound gauge—made
in ranges of 30"x15 lbs.,
30 lbs., 60 lbs., 100 lbs.,
150 lbs., 200 lbs., 300
lbs.



Marsh Serviceman—
capillary tubing is neatly
coiled in case when
not in use.

MARSH

*Refrigeration
Instruments*

2

TIMELY TIPS

ON REFRIGERATION PARTS AND SUPPLIES:

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Conveniently Warehoused
Competitively Priced

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BUY KELVINATOR FOR ALL YOUR REFRIGERATION REQUIREMENTS

*Kelvinator*

CONDENSING UNITS

REFRIGERATION PARTS AND SUPPLIES

2 WAYS TO BE ON THE SAFE SIDE



1. WEAR BOTH BELT AND SUSPENDERS

2. PROTECT THE JOB WITH HENRY PRODUCTS



The simplest job brings grief if equipment lets you down. That is why on all refrigeration and air conditioning jobs, it pays to be on the safe side, using HENRY Valves, Driers and Strainers. Henry manufacturing "know-how" plus your installation skill is the right combination to hold up your reputation and prevent exposure to customer criticism. Henry products not only make work go smoothly, they protect you against part failures and costly call-backs, assure more satisfaction to your customer and more profit to you.

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Instantaneous pressure relief and fast, positive reseating action with small differential between opening and closing pressures. Can be set to relieve at initial leak pressures ranging from 90 lbs. to 300 lbs. per square inch. Another famed Henry Product serving the industry.

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✓ **Ample** diaphragm plus balanced, low-rate adjusting spring.

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✓ **Frictionless** pusher pin.

✓ **Semi-liquid charged;** may be placed in ambient temperatures higher or lower than bulb temperatures with no loss of control.

✓ **Unmatched** sensitivity.

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Interchangeable Orifice Cartridges

Permit Proper Sizing on the job!

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2	1500	3400	3420
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5	9000	20400	20500
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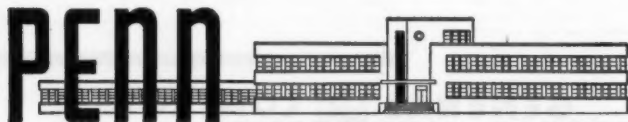
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It's better!
It's a PENN water valve

Look a PENN Water Valve over . . . study its outstanding features . . . and you'll soon see why refrigeration men call it a superior water valve. Design, manufacture and thorough testing . . . they're all combined to produce a better and more efficient water regulator that sets a new standard for dependable, long-life operation.

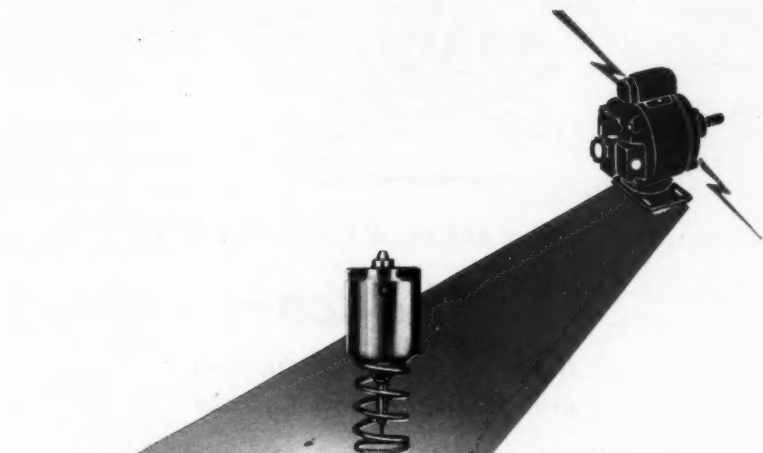
In the PENN Valve, the range spring and sliding parts are *not submerged in water*. Rust, corrosion and sedimentation never have a chance to get in their destructive work. There are no sticking seats, no rusty range

springs with this PENN Water Valve. It is extremely sensitive to changes in refrigerant head pressure . . . yet free from water hammer, too!

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THE NEW ALCO THERMO-LIMIT VALVE
PREVENTS OVERLOAD WHEN STARTING



A "cartridge" inside limits suction pressure and keeps the valve closed until the pressure drops below the valve setting. This prevents burned-out motors—often permits use of smaller condensing equipment.

Parts are interchangeable, so that pressure, capacity and super-heat can be changed in the field.

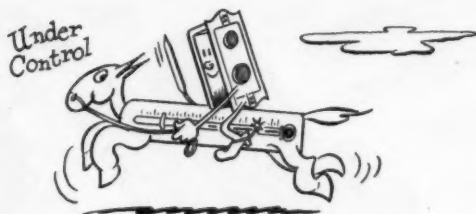
Available at your wholesaler's for smaller capacity commercial refrigeration. Ask for our Bulletin 152.



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*Both as to Construction
and Refrigeration Control*

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Ranco Type "O" Temperature Commercial Controls. Range screw changes cut-out and cut-in together. Differential screw changes cut-out only. Rating without magnet: 1 H.P. 110 or 220 volts a.c. Rating with magnet: 1 H.P. 110 or 220 volts a.c. $\frac{1}{2}$ H.P. 115-230 volts d.c.

THE REFRIGERATION SERVICE ENGINEER

The
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of
Refrigeration
Sales, Service
and Installation

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MAY, 1946

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THIS "BLOTTER" IN A BOTTLE

helps you get longer life from
air conditioning and refrigerating equipment



"Freon" safe refrigerants are almost totally dry. Manufacturing specifications permit not more than 25 parts of moisture per million parts of "Freon"!

Because they are so free from moisture, "Freon" refrigerants reduce to a minimum the risk of freezing capillary tubes and other parts of modern, compact units.

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determine the dryness of the product.

This is but one of many tests that are made throughout the intricate manufacture of "Freon" refrigerants to check and control the purity, dryness and other qualities of these superior refrigerants.

Today, prominent engineers in the air conditioning and refrigerating industry recognize these outstanding advantages of "Freon." That is one of the many reasons why they unhesitatingly recommend the use of equipment designed to utilize "Freon" safe refrigerants. Complete data on request. Kinetic Chemicals, Inc., Tenth and Market Sts., Wilmington 98, Del.

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safe refrigerants

"Freon" is Kinetic's registered trade mark for its fluorine refrigerants and propellants.

IN THIS ISSUE—

According to the thinking of a number of men in the industry today, 90% of the sales of refrigeration equipment, in the future, will be made through the replacement field. Building on this thought and to aid the smaller service organizations in securing their share of these sales, one progressive wholesaler on the west coast is pioneering in a new plan of displaying and merchandising package unit equipment. An article describing the plan appears on page 25.

The article entitled "The Low Down on the Low Side," on page 29, points out the need for higher humidity in the storage of meats and vegetables and tells how to obtain it when designing the system. Mr. Frazer, the author, thinks that many men use the psychrometric chart in planning an air conditioning system but seem to forget it in connection with refrigeration.

The concluding article in the series entitled "Electric Instruments—Principles of Operation," appears on page 30. It discusses the Induction type, Rectifier type and Thermocouple type of instrument.

A new type of combination display and storage cabinet called the "Fishkeeper" is described on page 34. It is the answer provided by a service engineer to the fish merchants' problem in refrigeration.

Another sample on-job training schedule for apprentices is described on page 35. This one is adapted to the needs of one service company and to its local conditions. It is in use at the present time.

Most of us think of pipe compounds as something to seal up the leaks in pipe threads, but "Requisite of a Good Pipe Thread Compound," appearing on pages 36 and 37, provides some insight into the research back of these compounds and the overall job they are expected to do.

The comments on question 726 by C. L. Olin, appearing in the Questions and Answers department, page 38, offers some interesting information on several subjects.

In addition it outlines a rather complete method of pump up efficiency tests on compressors, providing a plan for a test bench.

What is a serviceman to do when he finds the trouble on one machine is largely due to an alcohol "cure" and when installing another, he is instructed by the maker to inject alcohol? This is the complaint expressed in the Service Pointer section, this issue on page 41.

Those who are now or are planning to employ veterans as apprentices in refrigeration service work will do well to read the article on page 45. It describes the control the Veterans Administration expects to maintain over on-job training.

§ § §

COVER

OUR front cover this month is a view of the salesroom and service shop of Crow's Refrigeration Sales and Service Co., Baton Rouge, Louisiana.

Olin J. Crow, owner of the company, is also President of the RSES Louisiana Chapter. The meetings of the chapter are held each month in his show room.



Crow's Refrigeration Sales and Service Co.,
Baton Rouge, La.

The building is a one story frame construction with the front part used for display purposes and the rear for the service shop. While rebuilt equipment is about all that is available for display at present, Mr. Crow hopes that it won't be long before his display space can be filled with new equipment.



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Exterior of the Spokane, Wash. store, one of the five owned and operated by Refrigerative Supply Company in Pacific Coast States.

Progressive Wholesaler Adopts Plan of Package Unit Sales To Servicemen

By C. M. LITTELJOHN

AS ITS 12th business anniversary is marked this April, the Refrigerative Supply, Inc. at Seattle, Wash., and key cities of the Pacific Northwest, is launching something entirely new in the wholesaling field—the merchandising of packaged refrigerating equipment within a price range of from \$300 to \$2000 each, to refrigeration servicemen.

Launched in April 1934 by H. G. Stern, president, and two associates, the three-man organization did a business of \$35,000 the first year, to spread year by year to where more than a million dollars worth of business was done by a 28-man organization during the past year. Mr. Stern was recently elected secretary of the Refrigeration Equipment Wholesalers Association.

In initiating the new merchandising plan for the sale of self-contained packages—such as walk-ins, reach-ins, sloping front show cases and novelty boxes—Mr. Stern and his associates feel convinced that business for 1946 could be doubled and two million dollars worth done were it not for inability to secure the equipment fast enough.

Since this is the age of prefabricated or packaged merchandise in many lines, the organization whose network of refrigerated supply stores is spread strategically over the states of Washington, Oregon and province of British Columbia, Canada, is putting into effect an entirely new type of packaged merchandising plan from that of any wholesaler in the field.

The new packaged plan comprises complete displays of the self-contained units so that a veritable parade of products will be on display at all times, at each of the five set-ups in the Pacific Northwest, where pros-

Commercial customers depend upon the recommendation of service men who know their equipment and requirements, so service men represent a logical sales outlet for new equipment and we are going to help them get this business, says this progressive wholesaler.

pective buyers can be shown the equipment.

While getting away completely from the one-franchise dealer in a town idea, the 100% wholesale organization will feature the packaged merchandise so that anybody entitled to buy in its stores can buy the packaged goods—but the serviceman in the field will be key-man in the new plan, and the main marketing goal. It is he who will be cultivated, aided and abetted in every way. "We believe that the serviceman is the very best outlet for this type of merchandise," explained Mr. Stern, "since the serviceman over a period



H. G. STERN, President of Refrigerative Supply Inc., and Secretary of REWA

of years has established himself with butchers, hotels, delicatessens, meat markets, etc., and the owners of these places have great confidence in him. When a serviceman is called in by a butcher, for example, and finds a leaky coil, he has his foot in the door. He may tell the butcher, 'You have an old soft-soldered coil and I can repair it but you'll be in much better shape if you put in a new hard soldered coil.'

Mr. Stern explained that this opening wedge built on the confidence already gained is a real foothold for future business. The butcher or other proprietor of an establishment being serviced by the serviceman, learns to lean upon the advice and skill of such serviceman, and very often asks "If I need something new, what do I need?"

There is no comparison between this type of selling and the "cold turkey" seller of refrigeration merchandise, in the opinion of Mr. Stern, since the "cold turkey" man walks up cold to a butcher and usually finds him waiting on a customer or cutting up meat. When he attempts to lead off "cold," without previous acquaintance or contact, he is liable to get the brush off with "I'm very busy now. Come some other time." "The serviceman has tremendous advantages over the cold turkey salesman," emphasizes Mr. Stern.

More and more servicemen are coming into the widening and expanding refrigeration field, and more and more GI-servicemen, returning to the civilian ranks after extensive refrigeration knowledge gained on distant tropical battlefronts, where keeping the

plasma as well as foods refrigerated against the ever-present heat and menace of spoilage, taught them a lot.

He knows the ranks are swelling for, he states, "Sale of tools has advanced 100% in the last six or eight months." Some of the tools (and the sale of tools usually accounts for from 10 to 15% of the business, with coils and condensing units accounting for most) to be sure, have been placed in the hands of refrigeration engineers and servicemen working for others, but a lot of them have gone to new, independent servicemen—the sellers of packaged refrigeration units tomorrow.

All of these servicemen, new and old, will shortly find comprehensive displays of packaged merchandise in all the five stores of the company. There will be a magnificent array of such items shortly in the show and sales room of the Seattle store, which was the first one started 12 years ago.

Displays in All Stores

Other displays will be at Portland, Ore., where the second store was opened by the company shortly after the first; at Spokane, Wash., where store No. 3 was established when the wholesaling business swung into this "Inland Empire" region serving Eastern Washington and the contiguous panhandle of Idaho; at the Canadian store (No. 4) at Vancouver, metropolis of British Columbia; and at store No. 5, the lusty baby of the group, set up at Tacoma, Wash., only last October in the most recent expansion into that Puget Sound community—a store that has gone right ahead from scratch.

All of the five stores are of about equal size and handle about the same amount of merchandise. All will, therefore, have about the same size displays of chill chests, novelty boxes, large walk-in refrigerators, or reach-ins for the salads and pies of the modern restaurant or fountain lunch.

There are four manufacturing organizations whose leading lines are being represented in the new packaged parade of products to which prospects of the servicemen may come to be shown. Represented in the group are the Viking products of Kansas City; Sherer-Gillette of Marshall, Mich.; the La Crosse Novelty Box and Lockers of La Crosse, Wis.; and the Peterson Show Case & Fixture Co. of Los Angeles, Calif.

From a full examination of these completely self-contained lines the serviceman with a prospect can lead him to one of the cozy conference rooms and there close the deal. The wholesalers provide the display

and the facilities for this purpose, do not interfere and do not even know precisely what charge is made.

But here Mr. Stern has issued a warning to the serviceman. A word of advice which he often reiterates and considers important for the protection of all interests—the other dealers' as well as the servicemen's. "Be sure to get the right mark-up," he informs them. "You do not have to cut the price to get the job. You can get just as much mark-up as the dealer."

Some dealers have expressed a little concern about the possibility of a serviceman taking a job merely for the labor in it, or too little for the merchandise that they will install. Inasmuch as some of the newer servicemen have not yet developed to be businessmen or dealers, they may injure certain vested interests of other dealers who a short time ago were servicemen themselves but now have a store and all its overhead, bookkeepers and salesmen and all the rest of the staff and setup that comes with growth from small beginnings. Vested interests which it is believed have a right to be protected.

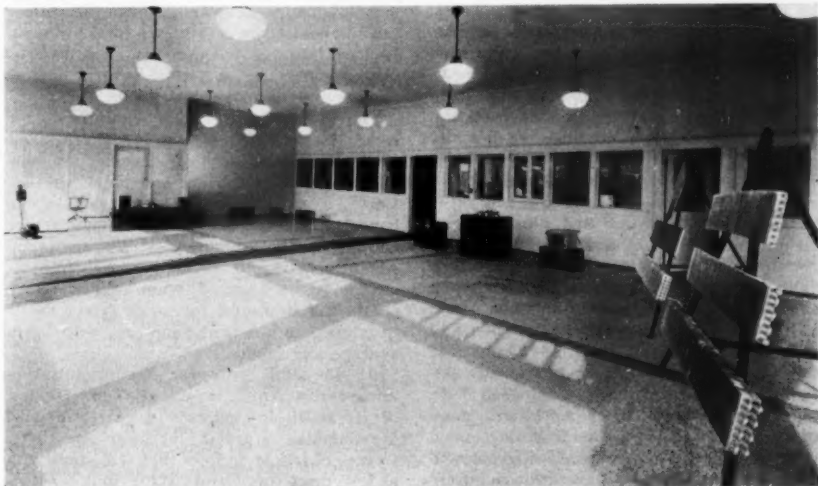
Mr. Stern and his associates know what it is to start modestly and to experience swift growth in an industry that has thrust forward in truly phenomenal style during the past dozen years. This background of experience will guide him in this new venture into new waters. Mr. Stern realizes the

wholesale organization is charting the shoals for the younger and less business-experienced servicemen, and he stands ready to help them mightily with the new packaged plan in which they will be "key" sellers.

It was really the refrigeration servicemen who started the business going back in April, 1934. It was then, in the midst of the depression, that national organizations laid off hordes of servicemen, technically experienced, fine, able men, well versed in their trade, who simply were not going to curl up and quit.

They started out instead as independent servicemen—many of them in Seattle. But as independent servicemen they could not buy materials from the companies laying them off, because they would not sell to other than officially franchised dealers. The need of a source of supply for refrigeration parts and equipment presented a natural foundation of solid bed-rock for formation of the Refrigerative Supply Co.

"They were glad," Mr. Stern recalls, "to have somebody start a business where they could get everything needed for a *complete* job. As we found out what they needed, we added to our lines. Now we buy from 60 different manufacturers, have 328 different kinds of belts, for instance, and about 6000 different items in all, and are still adding to lines. If a serviceman asks why don't you carry so and so and if we think there



Interior of Spokane store. Small office on the left will be private room for serviceman-customer conference. Empty space shows cleared area of salesroom that will shortly feature a display of packaged products.



Busy interior and counter of Portland, Ore. store, showing in Neon lights names of leading manufacturers whose products are featured. At counter, left to right: Verl Edwards; W. J. Hieber, vice-president of the company; unidentified counterman; and F. M. Crooks, secretary and treasurer.

will be a reasonable demand for it, we will put it in for him, so as to keep this a 'one stop' business where a man can get everything.

"While we have had a phenomenal growth, it's been a combination of hard work and riding the general wave. We cannot take all the credit for success in this business. There's an interesting point about this wholesaling—no matter whether we're in a depression or in prosperous times, we always do business. During the depression we keep existing equipment repaired, serviced and in operation, and in good times we sell new equipment in addition to replacements. Our business is at least 50% replacements."

Replacement follows in the wake of rapid advancement. Research and new and better products in the industry or new ideas developed in refrigeration equipment, causes quite a lot of equipment to become obsolete and outmoded, such, for instance, as finned coils. For a long time the organization sold coils with more "fins" than Finland has, and then the blower coils were developed. Although fin coils still enjoy a good sale, blower coils are getting more and more preference. Such an example is duplicated in other departments where progress and advancement of the refrigeration industry has developed new products.

In moving above the million dollar notch of business last year, the Refrigerative Sup-

ply, Inc. has widened its market through its strategically located stores for hosts of condensing units, coils, fittings, belts, gaskets, refrigerants and parts of every type, to carry out that "one stop" idea. Furthermore, the 1945 business, the management proudly declares, was not government business. During the war government orders ran to about 40 or 50% of the total business. In 1945, however, not even 15% was government business, but a normal natural flow of merchandise into regular channels.

"We have been selling equipment for locker plants," pointed out Mr. Stern, "and there have been a large number of new butcher shop, restaurant and hotel installations. The company does not go into the household field. Yet with the new freezer chests that will be part of the packaged parade shortly on view, some household business may be touched upon. The freezer chests will be useful for quick frozen foods in stores and delicatessens as well as in average size homes."

As the 13th year for the organization opened this April, the biggest undertaking of its swift and successful career begins. Merchandise starved markets for little freezer chests or lockers that will start with a list price of about \$120; milk coolers around \$400; sloping front cases that will sell in the lineup at around \$500 or \$600;

(Continued on page 47)

The Lowdown on The Low Side

The need for and methods of obtaining higher humidity in the storage of meats and vegetables.

By FRANCIS FRAZEE*

IT HAS been customary for refrigeration mechanics to consider the knowledge of air properties a phase of air conditioning work, related only to comfort or to process conditions. Storage conditions, however, are more critical than comfort conditions and a service engineer can save his customer many times the cost of the engineering, through longer storage of produce, by maintaining adequately high relative humidities.

The basic training in reading the psychrometric chart can be gained from lecture 16 of the series presented by the Refrigeration Service Engineers Society. Included with this lecture was a Dr. E. Vernon Hill Psychrometric Chart which today is in the hands of some six thousand members of the organization. A study of this lecture material will quickly familiarize the service engineer with the chart, and enable him to read the dew point temperatures and the relative humidity from a wet and dry bulb temperature.

Lettuce can be held in storage for two or three weeks at a temperature of 32° F. and 90% relative humidity. The grocer could maintain such conditions in his walk-in, but in practice we find he cannot hold greens more than 48 hours on many jobs. The butcher shop offers a somewhat similar problem in that when proper relative humidities are held, shrinkage will be about one tenth of 1% over a twenty-four hour period, whereas the shrinkage will be as much as 1% over the same period under badly controlled conditions. A number of other advantages might be pointed out to the engineer and his customer.

Contrary to the conception of the average refrigeration mechanic, comparatively little frosting of the coil is necessary to maintain proper temperatures for storage if a satis-

factory relative humidity is to be held in the cooler.

To take a design condition which lends itself easily to the use of the chart, let us assume that we would like to maintain a temperature in a walk-in of 35° F. and 80% relative humidity.

We find from our chart that we will have at this condition a dew point temperature of 30° F. At that temperature the air will have the right absolute humidity, as expressed on the chart in grains of moisture.

Most coil manufacturers indicate that the air leaving the coil is approximately 3° F. higher than the coil temperature, and the coil temperature will be 8° F. higher than the refrigerant temperature. It follows then that the coil temperature may be 27° F. and our refrigerant temperature 19° F.

The air leaving the coil is generally very close to saturation. We might expect the dry bulb temperature of the air leaving the coil to be 32° F., or 3° below the design temperature we wish to maintain.

Air to be Circulated

Employing the specific heat of air as .24 Btu., we find that each pound of air circulated through the coil will pick up .72 Btu., or $60 \times 3^\circ \times .24 = 43.2$ Btu.

To reduce this information to a measurable quantity of air to be circulated 43.2 should be divided into the product of the load or heat gain per hour times 12.5, the specific volume, which again is to be found on the psychrometric chart. These calculations factored in this manner are exact only if the load is all "sensible heat," but as we will have very little latent heat, it is sufficient to understand this material for commercial application.

$$\text{CFM} = \frac{\text{Load per hour} \times 12.5}{43.2}$$

In general you will find this volume of air will require a much larger coil or an extremely high velocity. If we had a one horsepower condensing unit on a cooler under these conditions, the load should be approximately 8,000 Btu. per hour; the forced convection coil would be approximately six sq. ft. in face area with a velocity of 500 fpm. A gravity coil ten feet by six feet would be about the right size.

Thus control of the temperature in the cooler becomes a problem of circulating sufficient air to maintain the temperature of 35° rather than reducing the cut-out point of the low pressure control.

(Continued on page 47)

* Member of the Chicago Chapter RSES, before whom this paper was delivered.

ELECTRIC INSTRUMENTS

Article Five

Principles of Operation

Induction, Rectifier and Thermocouple Types of Instruments
Are Discussed in This the Concluding Article of the Series.

By G. F. GARDENER*

Induction Type

THE fourth class of instruments which we are considering briefly is the induction type. This type is not used as widely as are the types previously mentioned. If we take a disk of copper or aluminum and place it in a field structure, as shown in Fig. 34, a current will be induced in the disk. The disk will tend to rotate when alternating currents of the proper phase relation are applied to the two coils. If we so place a spring that it resists the motion in the disk, and if we place

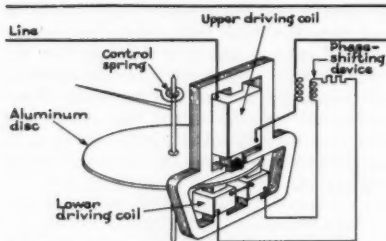


Fig. 34. Elementary diagram—simple induction-type instrument

a pointer to indicate the resultant position, the value of current will be indicated in the alternating-current line. This instrument, of course, can be used on alternating current only. If direct current were applied, the only time at which voltage would be induced in the disk would be just when the circuit was opened or closed. Thus, the disk will tend to move forward and then drop back to its initial position when a steady-state condition is reached. The disk must be

*General Engineering and Consulting Laboratory, General Electric Co., Schenectady, N. Y.

made of aluminum, or copper, or of some other material of high electrical conductivity. Since all these materials possess appreciable temperature coefficients of resistance, changes in temperature will affect the readings materially, unless carefully compensated for in other parts of the circuit. This has limited the usefulness of these devices as instruments to a considerable extent.

On the other hand, let us take a structure as shown in Fig. 34, omit the spring and pointer, and place magnets as shown in Fig. 35 at the edge of the disk. When alternating current flows in the field structure, the disk will tend to rotate as before. The disk will cut lines of magnetic flux from the magnets located at its periphery, and the currents induced will tend to reduce the speed of the disk. The effect of temperature on such an arrangement is not nearly so pronounced as in the case of the spring-controlled induction instrument. As the temperature increases, both the induced current actuating the disk and the eddy currents caused by the damping magnets tend to decrease in the

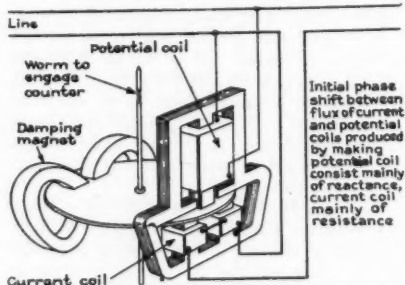


Fig. 35. Elementary diagram—simple induction watt-hour meter

same proportion. If we change the connections and add a counter, connected by suitable gearing, to count the total revolutions of the disk of the device shown in Fig. 35, we have the basic elements of the induction watt-hour meter.

Rectifier Type

Some instruments for alternating-current and voltage measurements are of the permanent-magnet moving-coil type used with auxiliary devices which enable a unidirectional current to be sent through the moving coil. It is only necessary that this unidirec-

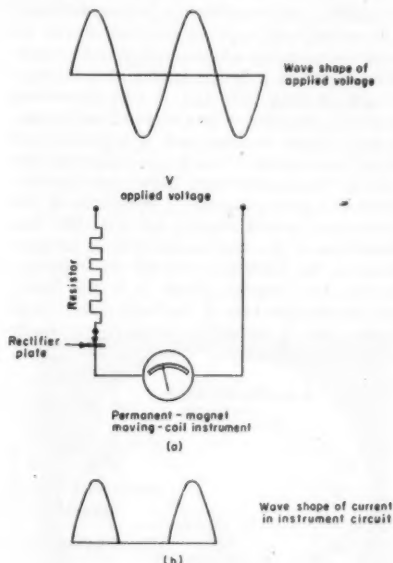


Fig. 36

tional current bear a definite relation to the alternating-current quantity being measured. The instrument scale can then be marked in terms of the alternating-current value. One easy way to do this is by means of a rectifier. This device allows free flow of current in one direction, but offers a high resistance to the flow of current in the opposite direction.

A rectifier instrument can be equipped with any one of several types of rectifying devices. The one most commonly used is the copper-oxide type, which works on the principle that the electrical resistance of a properly formed layer of copper oxide on a copper surface depends on the polarity of

the applied voltage. If we take such a copper-oxide plate, equipped with suitable contacting means, and connect it in the voltmeter circuit, as in Fig. 36a, the current flow through the permanent-magnet moving-coil instrument will be as shown in Fig. 36b. As the applied voltage, V , increases, the unidirectional current through the instrument moving coil will increase. An instrument indication will thus be secured, which bears a relation to the line a-c voltage, and the instrument scale can be marked in terms of a-c volts. This arrangement is called a *half-wave rectifier*.

The half-wave rectifier instrument, which we have just shown, would not be practical for most purposes, because during the negative half cycles during which no current flows, the rectifier must withstand the full line voltage. Copper-oxide plates are not

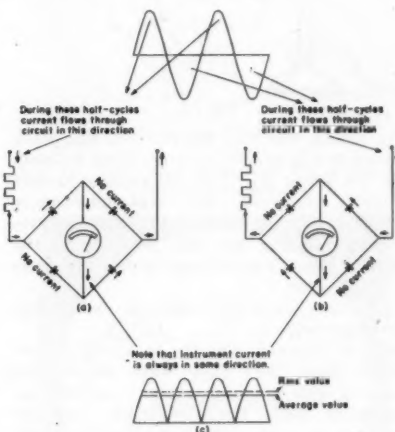


Fig. 37

well suited to withstand such inverse voltages, but this difficulty can be remedied by several methods. An easy way is to use four sets of plates connected, as shown in Fig. 37a. This arrangement is often called a *bridge connection*. For convenience, this figure has been drawn twice to show the paths taken by the current during the positive and negative half cycles, respectively. This bridge arrangement rectifies every half-cycle of the a-c wave and is called a *full-wave rectifier*.

Other arrangements are also used involving less than the four copper-oxide plates just mentioned. If such circuits are encountered, the reader can determine their

method of operation by making diagrams showing the current flow for each half cycle in the same manner as was done in Fig. 37a and b.

In working with rectifier instruments, we must always bear in mind what the instrument really indicates, regardless of how the scale may be marked. A permanent-magnet moving-coil type instrument indicates aver-

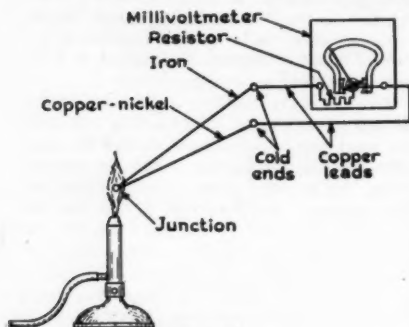


Fig. 38

age values, and with the rectified sine wave shown in Fig. 37c, the average value is shown by the lower line. On alternating-current circuits, however, the root-mean-square (RMS) value is the quantity generally required. In Fig. 37c, this is shown by the higher line. For a sine wave, the ratio

RMS value

— = 1.11 and the instrument average value scale is marked directly in terms of the RMS value. For other wave shapes, this ratio is different, and, hence, a rectifier instrument reads RMS quantities correctly only on the wave shape for which it is calibrated. This point must be kept in mind when using rectifier instruments to measure non-sinusoidal quantities, such as the outputs of constant-voltage transformers. Fortunately, the errors resulting from this condition are generally less than 10 per cent of full-scale value.

Some other points to be kept in mind when using rectifier-type instruments are:

(1) Some aging of the rectifiers occurs in service. For this reason, the stated accuracy of rectifier instruments is often given as ± 5 per cent of full scale. Consecutive readings, however, will often duplicate to within a few tenths of one per cent.

(2) Exposure of the rectifier instrument to high temperatures, such as 50 C, or to chemical vapors, such as sulphur fumes, may

shorten the life of the rectifier.

(3) The circuit of the instrument itself should never be opened when the rectifier is connected to the line, since this may allow full-line voltage to be impressed on the rectifier plates, and may damage the rectifier.

Despite these considerations, rectifier instruments play a very useful part in present-day measurements, because the permanent-magnet moving-coil construction gives higher sensitivity, and a more uniform scale than it is possible to secure with moving-iron or dynamometer types.

Thermocouple Type

Another way in which a permanent-magnet moving-coil type of instrument can be used to measure alternating-current quantities is to use a device known as a thermocouple. A long time ago, it was discovered that if a junction of two wires of unlike materials (such as iron and a copper-nickel alloy) were heated with a gas flame, and the free or "cold ends" were connected to a sensitive d-c millivoltmeter, a deflection of the instrument would result. See Fig. 38. The deflection of the instrument will be proportional to the difference between the temperature of the junction which is in the flame, and the temperature of the "cold end," which is the point of connection to the copper leads of the millivoltmeter.

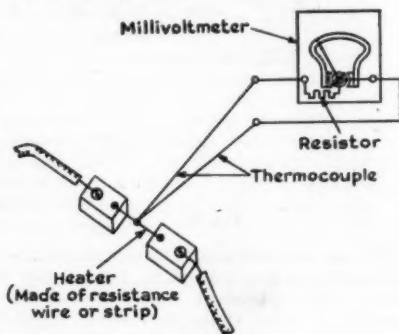


Fig. 39

This useful scheme is employed to measure alternating current by simply substituting a resistance wire, or heater, for the gas flame, shown in Fig. 38. See Fig. 39. When an alternating current is sent through this resistance wire which forms the heater, it will elevate the temperature of the junction in the same manner as before. Since the resistance of the heater remains substantially constant, the instrument scale can be

marked in terms of the current flowing in the heater circuit. As the temperature attained by the heater is proportional to the square of the current flowing through it, the instrument scale will open up greatly as the current increases. A typical scale is shown in Fig. 41.

The voltage from a thermocouple is proportional to the difference in temperature between the heated junction and the point at which the thermocouple wires are connected to the copper leads of the instrument. There-

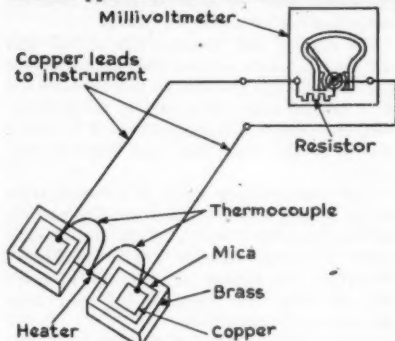


Fig. 40



Fig. 41. Typical scale of a standard thermocouple instrument

fore, any change in the temperature of this latter connection point would result in an error in instrument indication. To avoid errors caused by this condition, it is common practice to terminate the heater in rather massive blocks, and then bring the point at which the thermocouple leads join the copper circuit into good thermal contact with these blocks. This is usually done by connecting the leads to a thin copper plate,

and separating them from the block by a thin mica strip. This is called cold-junction compensation, and serves to maintain the connection at a fixed relation to the temperature of the heater. See Fig. 40.

The millivoltmeters, used with thermocouples to measure current, must necessarily be more sensitive than those used with shunts, because the electromotive force developed by a thermocouple is quite small. For example, such a thermocouple may have an output voltage of only 15 millivolts, and

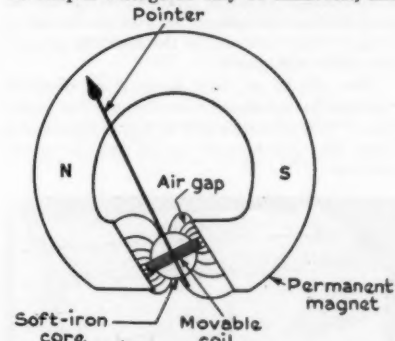


Fig. 42. Pole piece arrangement of a thermocouple instrument



Fig. 43. Typical expanded scale of a thermocouple instrument

an internal resistance of 5 ohms. This means that thermocouple instruments should be carefully handled, since the construction is necessarily somewhat delicate.

Another fact to keep in mind is that the heater temperature increases as the square of the current. An appreciable overload may raise the temperature of the heater so much that it will quickly burn out.

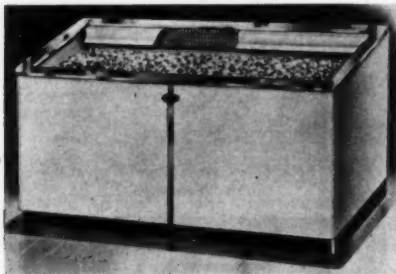
(Continued on page 50)

A Serviceman Designs The Fishkeeper

By DONALD DELAYEN

HARRY A. BORTZ, owner of the Bortz Refrigeration Co., Pittsburgh, Pa., is a serviceman of many years standing and as such he has specialized to a large extent in commercial work and in the building of custom built equipment.

His efforts of late have been directed toward the solution to the fish market problem of refrigeration and he has designed and built the "Fishkeeper" as his answer to the problem.



Front view of the Bortz Fishkeeper showing the fin coil above the bed of ice cubes which keeps the ice meltage at a minimum.

"Can you understand," said Mr. Bortz, "why the fish merchant does not use mechanical refrigeration in his business? Even the layman not in the refrigeration business nor connected with it in any way wonders why the fish merchant still buys ice to display and store his wares.

"It is not because the fish merchant does not want refrigerated equipment or that he cannot afford it. The losses he sustains through spoilage because of lack of proper refrigeration could pay for the equipment he needs."

The main reason why more mechanical refrigeration is not used by the fish merchant, according to Mr. Bortz, is that ice must be used in order to keep this highly perishable food in a thoroughly "wetted" condition.

"Furthermore," he says, "the fish merchant is not buying mechanical refrigeration because he cannot use such equipment as

has been manufactured in the past.

"Unless we still want to pass up this lucrative field we must consider the problems of the retail fish merchant and design and build equipment for his very needs."

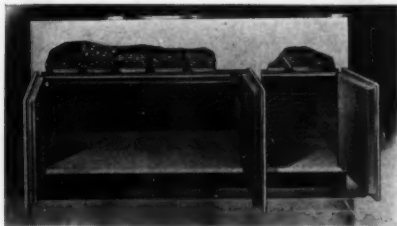
The problem of the fish dealer is one of display in which ice must be used to keep the fish in salable condition; the problem of storage for fresh fish and sea food in above-freezing temperature of about 33°. Again ice must be used to pack the stored fish. The problem of frozen fish storage where the space must be kept at below freezing temperatures of about 10° or 20°.

The display and preservation of fish and sea food involves several difficult problems. The storage and display of fish or sea food in a frozen state, however, is no problem with mechanical refrigeration as it is today. But it is the fresh fish that involves this problem.

Fish and sea food when in a frozen state can be stored in below freezing temperatures without harm to it and if displayed in frozen state, low temperatures will not harm it. However, the display and storage of fresh fish and sea food requires different temperature and conditions.

Frozen fish is shipped from the fisheries in cold storage cars in a frozen state in below freezing temperatures. Fresh fish is shipped from the fisheries packed in crushed ice in refrigerated cars with above freezing temperatures.

Ordinary mechanical refrigeration cannot be used for the display of fresh fish and



Rear view of the Fishkeeper showing the shelf for freezing ice cubes and storage spaces for fresh and frozen fish.

fresh fish cannot be stored in below freezing temperatures. If fresh fish is displayed in ordinary refrigerated show cases, the comparatively dry air dries the fish.

"It must be remembered," he continued, "that using ice is the only way that fresh fish can be stored or displayed. Slowly melting ice has the proper temperature and

(Continued on page 50)

SCHEDULE OF "ON-THE-JOB" TRAINING FOR SERVICEMEN

IN THE last several months, quite a number of service companies have set up on-the-job training schedules for apprentices. While there is a similarity between all of them, the difference usually occurs in incorporating state and union regulations.

Published in the January issue of this journal was the Apprenticeship Standards for the refrigeration service industry as recommended by the Refrigeration Service Engineers Society. Included with it was a schedule of training.

The Wilson Refrigeration Service and Engineering, Hannibal, Missouri, is one of the service companies that has recently set up such a schedule, typical of others in other localities.

A copy of this schedule was recently received from George H. Wilson, owner of the company, who states in his letter "We think that perhaps you might be interested in what one of your members is doing and how we are handling the veteran problem. As you can see we have followed your general form on the training program, but have added to it to meet the requirements of our Local Union No. 581 Steamfitters, A. F. of L."

Agreement

The duties of a service fitter shall consist of installing and servicing refrigerating systems, oil burners, stokers, gasoline pumps, gas stoves, etc., as stated in the constitution of Steamfitter, A. F. of L. We quote, "The installation, starting, and adjusting, or moving from one location to another, pumping down and dismantling, the servicing of refrigeration, air conditioning, stokers, oilburners, pumps, gas stoves, etc., and auxiliary appurtenances for same, or replacement of parts and appliances for the same. The apprentice must be between the ages of 18 and 25, (exclusive of veterans), have satisfactorily completed a high school education. Before becoming a Journeyman must serve 5 (five) years as apprentice helper, satisfactorily complete such technical study as set down by the Local Union. The service fitter shall furnish such tool kit and hand tools as customary. The apprentice shall furnish the same tools as the Journeyman to learn the proper care and use of same."

The wages of a serviceman shall be at the rate of \$1.00 per hour. Working conditions shall be governed as per the agreement with Local Union 581, Hannibal, Missouri, Steamfitters A. F. of L.

The hours of the apprentice schedule in the following may be altered slightly to meet the Union agreement.

The apprentice wage will be scaled in accordance with the Union regulations and graduated pay increase as follows:

1st period of six months—50%	of base.
2nd period of six months—55%	of base.
3rd period of six months—60%	of base.
4th period of six months—65%	of base.
5th period of six months—70%	of base.
6th period of six months—75%	of base.
7th to the 10th period—85%	of base.

Schedule of Training

Hours	Kind of Work
120	Parts Ordering and Identification.
CONDENSING UNITS	
440	Compressor repairs on valve plates, service valves, bearings, seals, etc.
120	Compressor testing for satisfactory operation.
120	Compressor cleaning and dehydration.
80	Condenser repair and cleaning.
160	Motor (Minor repair all operations, except winding), replacement and alignment.
120	Motor capacitor and protector wiring and testing.
VALVES	
40	Water valves, adjustment and installation.
160	Expansion valve adjustment, installation, and replacement.
120	Control valves, adjustment and installation.
80	Stoker and oil burner valve adjustment and replacement.
80	Solenoid valve installation and wiring.
CONTROLS	
80	Thermostatic switches, installation and adjustment.
80	Pressurestatic switches, installation and adjustment.
120	Wiring control circuits.
120	Relays and starting switches, installation and repair.
EVAPORATORS OR HEAT TRANSFER UNITS	
240	Installation with baffles.
80	Repair and recondition.
240	Dehydrating, testing.
240	Steam and electric installation and replacement, repair.
REFRIGERANTS AND HEAT TRANSFER MEDIUMS	
200	Transfer from shipping cylinders to service cylinders and containers.
200	Charging and discharging systems.
240	Leak detection by various methods.
40	Purging various systems.
160	Determining proper charge.
160	Care and handling.
GENERAL ERECTION FOR ALL APPLICATIONS	
680	Refrigerators, stokers, oil burners.
2,000	General service work as helper (including troubleshooting, replacement of parts, estimating, surveying, or diagnosing trouble).
1,380	Service on all types as a Journeyman.
8,000	Total hours.

Requisite of a good

Pipe Thread Compound

By I. H. GRANCELL*

OF INTEREST to engineers is the study of the various types of threads that have been developed throughout the years. Industry has seen great progress in the various methods of thread cutting. For example we find that originally on steel and brass, a stock containing one to three dies was used and was adjusted to create a tapered thread. The taps were identical and by starting to cut from $\frac{1}{4}$ " and by uninterrupted cutting, you could increase the size until you had from $\frac{1}{2}$ " to $\frac{3}{4}$ "—still using the very same dies and taps. When they wanted a tap to cut a certain size thread, they designed the well known square die. For cutting deep or tight fitting threads the two piece die was developed. Since then dies and taps have advanced to more complex forms.

Thread manufacturers have ceaselessly sought to produce perfectly mated threads. Frequent inspection during cutting has minimized flaws. With the many improvements in equipment, the thread cutting industry has been brought closer to mathematical accuracy. Still in spite of much experimentation the fact remains that no two threads are cut exactly alike or are exactly mated. A magnifying glass will usually show up the ragged edges.

Perfect Thread Connections

It is possible with the use of a suitable compound to make a perfectly mated thread connection, and that is by using a cold drawing process. A proper material on the two metals makes it possible for them to be drawn into perfect alignment. This compound should be of such a nature that it will prevent heat by eliminating most friction. It should smooth out the threads and enable the fittings to go to the maximum points—making a shoulder to shoulder contact. A joint can be assembled at any speed and still eliminate any wobble joints, wash joints, mud cuts, scratch failures, seizures or galling.

* Manufacturer of Bestolife Products.

Throughout the years, many types of compounds have been tested and used in the assembly of threaded connections, but in all cases the intent has been to create a filler between the threads.

The "Filler" Theory

When discarding an old theory, one must have in its place a better one. This theory must be tested so that its value can be proved to a skeptical world. Thus it was that we did away with the old theory of using a filler for threads and proceeded to experiment with many finely blended materials. In conclusion we found that one particular form of metallic lead was superior to others if blended in the correct proportions. Considerable work was necessary to develop this form of lead for volume commercial production and after having done so, it was still another problem to bring together the additional materials in the quantities necessary to produce a thread compound. Lead in this form, we discovered, will not seize and has a satisfactory low shear strength if building does start up.

Characteristics of Thread Compounds

Several years ago, we came to the conclusion that the ideal thread compound should have the following distinct characteristics:

1. It should be both non-expanding and non-contracting.
2. Its consistency should remain unchanged whether it is used with a high temperature or in a temperature below zero.
3. It should prevent friction when the joint is being made up.
4. The use of the compound should improve the condition of the threads, not cause them to wear.
5. It should be of such a nature that it might be used on all joint connections regardless of their nature. (Air, gas, oil, steam, ammonia, alkali, acid, hydro-

carbon, chloride or any other chemical line.)

In short, it should always allow full advantage to be taken of each of the threads of an individual joint.

Disassembling Joints

Of course, tolerances must be allowed for in mating threads. They may vary according to the size of the threads, nature of the metal and the purpose for which the joint may be used. The new A.P.I. round casing threads allows .005" clearance between the crest and the root. Tolerances as high as .010" are not unusual. It is quite evident, therefore, that some compound must be used in order to create a perfect joint after the pipe or joint leaves the mill.

Before joint compounds came into use, mechanics, boilermakers, steamfitters and plumbers had only one way of making up a joint. That was to apply some form of lubricating oil on the threads and then by throwing a wrench on the pipe they would tighten up the joint as far as possible. During this simple process, galling and seizing nearly always resulted, and if the joint was allowed to remain assembled for any length of time or was subject to any heat or pressure it "froze."

When the time came to disconnect the joint, it usually had to be cut off and the pipe rethreaded. This was due to the fact that the mechanic's weight on the wrench, plus hammer blows and a few angry words, could not budge the joint. Still, today, the process goes on just about the same way, only the welder's torch is used to do the cutting job.

How much simpler it would have been if in the beginning a good thread compound had been applied. The cost of "frozen" joints is very high in any industries that do not employ use of an anti-seize joint sealer.

The first commonly used compounds were white or red lead combined with oils and greases. There were also many types of cement fillers. A very commonly used type was a mixture made of mud and graphite. Metallic zinc, zinc chlorides and oxides came into use only a few years ago. These also were compounded with various oils, greases, stearates and soaps which carried further the filler theory. Many methods have been tried by electro-plating, copper sulphating and metalizing with various types of metals

such as zinc, copper and lead which also act as fillers.

In analyzing the effects of the many thread compounds on the market today, there are as we know some brands that are satisfactory for some purposes while they fall short of being a success when applied to other phases of operation. A thoroughly favorable compound will maintain a tight joint in any degree of temperature or under any amount of pressure. Some on the market today can only be useful when a certain temperature or pressure is reached. A thoroughly favorable compound will not seize or gall regardless of the pressure applied to it. Some compounds might work well under a low torque but will bring about seizure or galling when a high amount of torque is used. A good compound should be versatile, and should be of great value even when making press fits, for use as a packing compound or as a wire line compound.

Effects of Inferior Compounds

Zinc and graphite have been used again and again for joints or threads. Zinc has a crystalline structure and is very hard and brittle. When applied to a joint, it causes a grinding action and causes the slivered edges of the threads to shear. These slivers are pushed ahead to where they become imbedded in the pipe threads and hinder assembly to the proper depth. It also has a tendency to alloy with the other metals and starts a so-called "building up" on the edges of the threads. Graphite, on the other hand, appears to have still another reaction. While the slivers are removed the same way, graphite compositions create a film or cake. This layer of graphite may have a relatively high shear strength. Graphite does not allow the joint to be made up to its full capacity, resulting in leakage.

A compound has been developed which is a combination of the highest quality materials obtainable. It is soluble in all connections mentioned previously, except water. This compound was first thoroughly tested in a laboratory and then by the chemists of various oil industry and production companies. Furnace, refrigeration, shipbuilding and other manufacturing and service organizations came next. The war brought on the Army and Navy demands, and they, too, tested the compound under every condition for which it would be used.

Much to our great satisfaction, we found years of research had brought success. Every test resulted in approval!

QUESTIONS AND ANSWERS

On Problems of Servicing, Installation and Maintenance of Household and Commercial Refrigerating Equipment—Send Your Problems to the Question Box.

COMMENTS ON QUESTION 726

EDITOR: I could not pass up question 726 under "Information Please" without contributing the following comments:

1. Your inquirer might be interested in the instructions we published some years ago in the "Servel Installation and Service Manual" covering the overhaul and repair of compressors in the field, and following this letter, are excerpts from it.

The compressors listed are not now being manufactured, and in addition the test information pertaining thereto applies specifically to those compressors. On the other hand, your inquirer might be interested in the principles of inspection, testing and repair proposed in that manual.

Actually, the "pump up" method of testing volumetric efficiency was used on our production line up until some months ago when we installed direct reading flow meters in our volumetric test rooms.

2. No comments.

3. The condensing unit referred to in the question is apparently one made by us under the model designation SE-42. It was a low temperature type $\frac{1}{4}$ hp. vertical belt driven model.

4. It is our understanding there will be two or three other producers of gas operated absorption type refrigerators besides the Servel gas refrigerator. Just what companies will be involved and just when production will start is not yet clear.

Commercial Hermetics

5. From where we sit the trend in commercial refrigerating machines is toward the hermetically sealed type construction. There are definite production advantages in this type of equipment, and the "sealed in" feature has definite selling advantages.

While with this type of design we have been able to obtain compactness, better overall performance and reduced the possibilities of break down in service, it was really the trend toward self-contained fixtures for practically every type of application that made it possible to realize all the advantages of hermetically sealed units.

There is a trend in the field of commercial hermetically sealed condensing units toward conducting repairs by the replacement of components or sub-assemblies rather than a complete unit, and when discussing this subject with servicemen we have suggested they give more attention to merchandising parts and equipment than to merchandising time (referring, of course, to labor).

The sealed unit has some limitations in that it is not practical to produce a great range of compressor displacements, in fact, it is only practical to produce the sealed unit where considerable quantities of given sizes can be produced although there will be the odd frequency and DC applications and in addition gasoline engine driven applications, and accordingly, we for one are going to continue to produce the belt driven type condensing units even though we will concentrate on the Servel Supermetic.

6. At least one important manufacturer of two temperature refrigerators is going to accomplish the two temperatures by the use of two condensing units. Others are planning on the use of circuits that are within the scope of the "Potter patents."—C. L. Olin, *Western Manager, Servel, Inc., Evansville, Ind.*

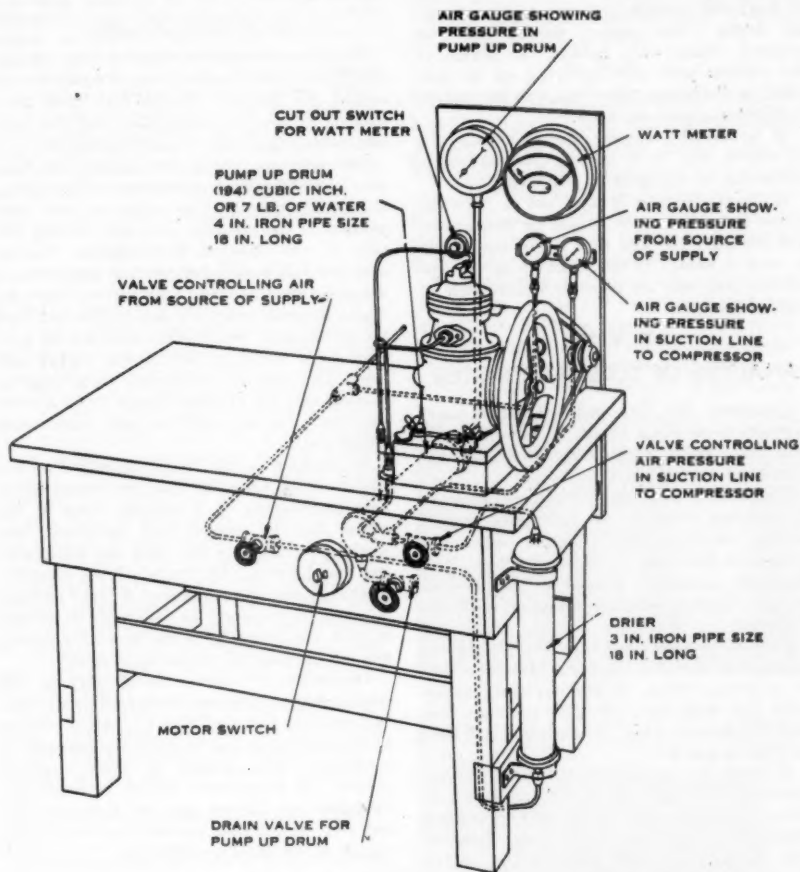
Compressor Repairs—Testing

The most important of all shop repairs is the proper overhauling of the compressor. The compressor is the heart of the machine unit and it is necessary that this particular part operate properly and efficiently. It is essential that all compressor repairs are made to meet the standard test as to volumetric efficiency, operation friction and quietness of operation. The most suitable method that can be used for this purpose is the testing of such compressors on a "pump-up" bench similar to Fig. 1. This particular "pump-up" bench will accommodate those compressors having a bore of less than $1\frac{3}{4}$ ". A similar "pump-up" bench should be constructed to test compressors having a bore of 2" to 2 $\frac{1}{2}$ ".

Each compressor should be made to meet the volumetric efficiency standard as indicated in Fig. 1.

Regardless of any test made by the service man in the field when the compressor was removed, every compressor that is brought into the dealer's shop, apparently inefficient, noisy, or defective in some other manner, should be tested on the pump-up bench before any repairs are made. First, the volumetric efficiency (pump-up) should be tested. Then the compressor should be tested for noise at various back pressures

by operating the valve controlling the air pressure to the suction port of the compressor. By this valve it is possible to raise or lower the suction pressure over the entire range at which the compressor operates in the field. If either of these tests should substantiate the claims made by the service man then, of course, the compressor should be dismantled and the repairs started. However, if the test proves the compressor is



Compressor	Cylinders	Bore	Stroke	RPM	Lbs./Sq. In.	Time
R-20284, R-20284B	1	1 1/8"	1 1/8"	400	150	3 Min. 22 Sec.
R-1000B, R-1098, R-1098B, R-1098C	2	1 1/4"	1 1/4"	400	150	1 Min. 45 Sec.
1-29, 1-45, 1-78	1	1 1/4"	1 1/4"	400	150	1 Min. 40 Sec.
1-77	2	1 1/4"	1 1/4"	400	150	1 Min. 30 Sec.
R-1063B, R-1063D, R-20324, 1-1	2	1 1/4"	1 1/4"	400	180	1 Min. 45 Sec.
1-41, 1-51, 1-65	2	1 1/4"	1 1/4"	400	180	1 Min. 15 Sec.

satisfactory then the service man should reinstall the compressor on the original user's machine unit, investigate further for the difficulty which, apparently, was not due to any compressor defect.

If, after checking the compressor it is found that it is inefficient, i.e., it does not pump up in the required time allotted, a test should be made for a possible leak at the discharge valve.

The compressor should be run to obtain at least 100 pounds pressure in the pump-up drum. The motor should then be stopped. Then, while holding the thumb at the suction port and applying oil at that point, a discharge valve leak will be evident if bubbles appear in the oil.

If no bubbles appear, the inefficiency is, no doubt, due to a leaking suction valve, which can be replaced or repaired.

If the compressor is noisy but is, from the above test, efficient, it should be dismantled and the part checked that might contribute to such a noise. Loose piston pins or connecting rods are the most probable cause of such a condition.

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ANALYSIS OF SLUDGE IN SYSTEM

QUESTION 743: The enclosed sealed paper contains some black grains of some material that has been continually plugging the screens of one of our small units.

The unit is a ½ hp. Frigidaire designed for sulphur dioxide. We converted it to a methyl chloride job. Several times the screen on the inlet to the liquid line drier has been completely plugged by this material, so as to cause a complete stoppage of the refrigerant.

I would like very much to know what this material is so that I can get an idea of where it is coming from. I will certainly appreciate any help you can give me regarding this. If there is a fee for analyzing it I shall be glad to pay it.

ANSWER: On inspecting the black foreign substance you sent to us for analysis, we forwarded the sample to the Ansul Chemical Company, Marinette, Wisconsin, together with a copy of your letter. Dr. W. O. Walker, who is in charge of research for Ansul will, no doubt, reply direct to you.

You did not say whether the system was carefully cleaned before changing to methyl chloride. In all probability the sample in question is carbon that remained in the system after removing the sulphur dioxide. You may find the carbon is being formed in the

compressor head due to extreme temperatures at this point.

One suggestion we offer is to use a large screen and filter at the liquid receiver outlet to catch all foreign substance. You will find a screen and asbestos cloth type filter will serve very well in this case.

A thorough cleaning of the receiver and condenser with carbon tetrachloride will likely reveal quite a large quantity of foreign matter.

Dr. Walker's Analysis

The small sample of black grainy sludge which you took from a ½ hp. Frigidaire designed for sulphur dioxide has been forwarded to me. We understood that this unit had been converted to methyl chloride.

Our analysis reveals the presence of copper, iron, chloride, and sulphate. This analysis would indicate that moisture had been present in the machine, probably during the time it was charged with sulphur dioxide and that this same moisture was also present when charge was made with methyl chloride. These deposits originate due to the fact that the refrigerant reacts with moisture to produce acids which in turn attack copper and iron. The sulphate originates from sulphur dioxide and the chloride comes from methyl chloride. Copper and iron can come from either source.

In addition to the things suggested by the editor of the Question Box, we would advocate installation of a suitable drier in the liquid line to remove any moisture that might be present in this unit and still causing you trouble. Of course if the quantity of sludge and other material is large enough, it might be necessary to deal more drastically with the situation in the event the operation of the machine is not satisfactory.

Indication of carbon being part of the grainy deposit was not confirmed by us since our analysis revealed that at least a portion of the deposit is due to corrosion induced by moisture. The nature of these deposits creates an appearance which is sometimes mistaken for carbon and we therefore can not rely on physical appearance as an indication of chemical constitution.

§ § §

E. F. Cassing
Boonville, Missouri

Needless to say I appreciate very much
THE REFRIGERATION SERVICE ENGINEER.
However, it should either be twice its original size or on a bi-monthly basis.

SERVICE POINTERS

Practical Solutions of Your Service Problems

THIS department is an aid to service engineers who are seeking new devices or methods to improve their work. All the service pointers have been supplied by the subscribers. **THE REFRIGERATION SERVICE ENGINEER** invites readers to submit "down-to-earth" practical service and installation information. Five dollars will be paid for each pointer published. Every service engineer has one or more "links" that have proved useful in every day practice. Here is your opportunity to exchange service pointers with the other fellow and earn \$5.00 for the information. Write up your idea today and mail it to the Service Pointer Editor.

HOW DO YOU LIKE YOUR ALCOHOL?

LAST week I reoperated a Frigidaire twin cylinder compressor. When the compressor was removed from the job a strong alcohol odor was noticed. Upon examination at the shop both discharge valves were found broken and the internal parts were copper plated and had a dark gray, rough deposit. Looked like a hard water deposit. This compressor was badly stuck up from the deposit on all internal parts. All this was, of course, the result of moisture and an alcohol "cure."

A few days later I received a new nationally known make (not Frigidaire) "Freon" replacement unit for another job. The new unit was a complete replacement, freezer shelf, tubing, condenser and hermetic unit. I quote from the factory instructions with the unit:

"Use only clean high grade methyl alcohol. Never add more than the prescribed amount when charging the system. Never use any drying agent in one of these systems."

Instructions in adding the charge, again I quote:

"The 1½ inch section of the ¾ inch tubing still connected to the line will hold the correct amount of methyl alcohol to be used. With the tube held in an upright position, put 8 c.c. or about 4 teaspoonsful of alcohol into this tube."

The complete charge is only about one and one quarter pounds or less. The point is, what can a service man do when installing

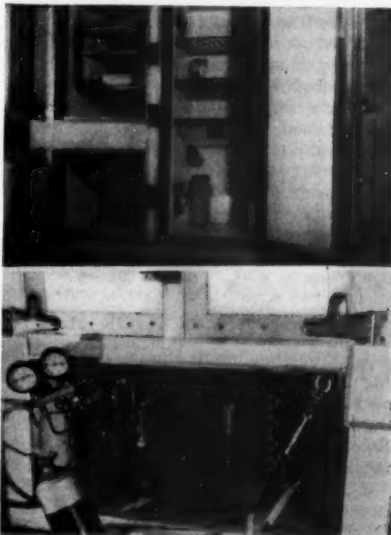
factory guaranteed merchandise except follow the factory instructions? Someone, for the benefit of the consumers, ought to bring this manufacturer up to date. As for me, I'll take mine in a glass and stick to driers for refrigeration.—K. G. D.

§ § §

CONVERTING A "LEONARD CLEANABLE" TO ELECTRIC REFRIGERATION

QUESTION 737 in the March issue inquired about converting a "Leonard Cleanable" icebox to mechanical refrigeration. I have recently made such a conversion and perhaps you would be interested in pictures and a description.

I constructed a machine compartment in the bottom of the box to make it self contained because it is installed in an apartment building. Using 1½" square lumber I built a frame and fastened it with screws and angle irons to the bottom of the icebox.



The upper view shows the evaporator hung in the ice compartment of the Leonard box. The lower view is of the machine compartment added to the cabinet.

The floor of the compartment is $\frac{1}{2}$ " lumber and casters were removed from the bottom of the icebox and installed on the bottom of the machine compartment. The unit used to power the cabinet is a $\frac{1}{4}$ hp. air cooled G.E. rotary compressor mounted on a steel base. Heavy springs hung from steel hooks fastened to sides of the frame work with adjustable screw hangers to level the unit formed the unit mounting.

The drain pipe leading from the ice compartment was removed and the liquid line, suction line and wiring run up through this hole. The hole was finally sealed to prevent infiltration of air at this point. A flooded type evaporator measuring 18" wide by 12" deep by $9\frac{1}{2}$ " high was installed in the ice compartment. It was necessary to drill holes in the top of the box from the inside, then with long wood screws fasten angle iron to the top to which the evaporator was mounted. A capillary tube served as both a liquid line and the metering device to the evaporator. The capillary tube is 7 ft. in length and .050 inch inside diameter. It was wound around the suction line inside the cabinet to effect a heat exchanger. Refrigerant used is $3\frac{1}{2}$ lb. "Freon-12." The cold control used is a push button type such as used on Coldspot refrigerators. It was mounted on the front of the evaporator with sheet metal cut to fit.

The original metal shielding around the ice compartment and the rack for the ice were removed to permit free circulation of air down through the bottom of the ice compartment and up the other side of the refrigerator. In an average room temperature of 75°, the cabinet is now maintained at between 40° and 45° F. The running time is about eight minutes and the off period from ten to twelve minutes.—Submitted by A. F. Walt, Cleveland, Ohio.

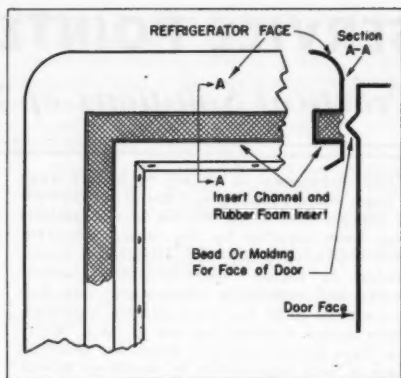
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REFRIGERATION DOOR SEAL

ONE outstanding flaw in the manufacture of cabinets has had very little change up to this date, namely:—

The method of sealing the door or lid. Every refrigerator man knows the main point is the upper corner above the latch and along that side. Thanks to greasy or sweaty hands the rubber door seal rots. People will open the door and then hang on to it with one hand while reaching in with the other.

Also the sizes and shapes of seals vary and doors warp or hinges wear from lack of



Sketch of door bead and refrigerator face channel in which the door seal is inserted.

sufficient hinge surface. Perhaps one in a thousand ever think of putting a drop of oil on the hinges. The result is a droopy door and poor door seal. Also most door seals are awkward to set in place correctly and with the rubber as it is, well, it takes time.

Therefore, I feel that the following may be of use and would, in the long run, remove an awkward spot.

In place of the usual seal attached to the door as they now are, replace with a "V" or "U" shaped raised metal rib, and have a channeled inset in the cabinet face. In the channel place the rubber seal such as the rubber foam stripping sold for weather sealing, the face of which should come flush with the cabinet face.

The "V" or "U" shaped strip or molding of the door coincides with the rubber faced inset. Although the door is out of line it still will center itself with the insert channel. The rubber stripping is easily replaceable in the channel of the facing, and the efficiency of door sealing is raised quite a percentage.—Submitted by W. C. Hefferlin Livingston, Montana.

§ § §

W. Byrt
Whangarei, New Zealand

I wish to take this opportunity of letting you know that I find THE REFRIGERATION SERVICE ENGINEER of inestimable value. The least and most I can say is, thank you for making available such a wealth of practical assistance and I would like to express my sincerest good wishes. The little magazine travels a long way before it reaches me, but it certainly gets a warm welcome.

Problems of the Day

By HERMAN GOLDBERG*

MANY people are prone to view the future with a tremendous amount of alarm, but I contend the future offers a challenge to all of us—particularly those of us in the refrigeration industry.

We have looked forward to the immediate period after the war with the hope that we would go back to our ways of living on a pre-war basis. Before the problems of reconversion struck us, we had many authorities in the business world tell us how fast prosperity would return to us, how many million homes would be built, how many million appliance units of one kind or another would be ready for delivery, until I believe we were lulled into a feeling of false security.

We are learning now that the problems of readjusting ourselves are just as great as the problems we had after entering the war—if not a good deal greater. We are realizing now that our problems are only a part of a network of problems involving millions of people throughout the world, and somewhat to our surprise, we are finding ourselves still short of foods, clothing and finished products for which we have been so patiently waiting. However, we must bear in mind that these are extraordinary times, and unique in history. We seem to have many obligations to fulfill before returning to our normal peace-time activities.

Service Most Important

The real worth and value of the refrigeration service man again is being proven through the present drives to conserve food in this country in order that we might be able to ship as much as possible to the less fortunate people of other countries. Our nation at large is saving tremendous tonnage of food through use of our present refrigeration equipment, and your knowledge and work in keeping all of our equipment in running condition is contributing to many thousands of saved lives in the starved war-torn countries. We are proudly meeting this moral obligation.

*Herman Goldberg Co., Chicago, Ill., Paper delivered before the First Annual Meeting of Wisconsin State Association, RSES, March 16.

We also have many obligations to ourselves, and one of these is to adjust our physical and mental processes so that we may keep pace with the many changes in progress.

Let us digress a bit and look back to the uncertain times and periods during the war days. We do not have to think too hard to remember the numerous hardships and restrictions of that time, but it was different when we could dream of the day when we might immerse victorious from the struggles of war. It was rather difficult then to visualize material procurement without rationing, labor conditions without the pressure of war necessity, mechanical equipment without restraining priorities, but we looked forward to immediate cessation of these worries, with the event of peace. While most of us felt there would be some minor difficulties; nevertheless, we felt it wouldn't take long to get back into the groove of pre-war living and spending.

This Is the Postwar Period

We now are living in the period about which we dreamed, but our ways of reckoning are not the same. This holds good for our industry in general. The service man's problems are not the only ones, because the large corporations, with their well-managed, highly-paid personnel, appear to have few concrete answers about their abilities to secure the materials and skilled labor to make and deliver products similar to those produced before the war.

In my traveling of recent months, I have had occasion to talk to numerous individual service men and contractors whose problems are singularly similar. There is plenty of work for all engaged in our industry at the present time; as a matter of fact, most of you can choose your jobs or customers and practically charge as much as you want to for your services. I know that most of you are conservative and are doing the best you possibly can to cause lasting satisfactory relationships between your customers and yourselves, because you undoubtedly have recognized, the over-charged customer merely switches from one source of supply to another, even though at times the customer might be charged more through changing sources of supply. It is no secret, then, that by charging a sufficient amount for services rendered, and avoiding over-charge, the most satisfactory customer relationship can be maintained by the service men. Your problem, then, today is not one of having customers; it is one of procuring

necessary equipment, supplies and help, which still are not available in sufficient quantity to take care of your trade needs.

It is my opinion that the road for profitable service work is, and will be, clear for quite some time, and that the average conscientious service man or organization will enjoy abundant business opportunity for quite a while. However, it is well to recognize that the law of supply and demand always equalizes for a period before it goes into a see-saw reversal. In other words, right now there is a tremendous demand for your services, and there is a shortage of materials. The demand is here because of the great need to maintain present equipment, which might have been replaced by now had the manufacturers been able to assemble new equipment. It stands to reason that when the manufacturers go into production, the units in need of constant care will be replaced. As these units are replaced a good bit of service work will be taken from the general trade.

New Opportunities

The mere fact, however, that these new refrigeration units will have to be sold and installed, means new opportunity because you will have a lot to do with sales and installation of new equipment. Further, as new units come into the field, we must remember, too, that many manufacturers are developing and processing new uses of refrigeration which up to now have not been used.

The trained men to handle these ideas, which are now past the drawing boards, are none other than yourselves. There will be many new people entering your fields but it is foolhardy to think that men taught in schools alone can have complete knowledge of refrigeration unless they have had practical years of experience, too. While there are many young men now going to school in preparation to enter the refrigeration field, it is their thought to tie themselves in with men of practical experience, because they recognize that the things they will learn at school are merely preliminaries to the many things they will learn in the field. If you make the mistake of fearing them as possible competitors, you will gain nothing from their learning—but if you will accept them and help them find positions through which they will be able to work with you, you will acquire some new knowledge and the additional help you will need.

Through the very means of allowing opportunity to newcomers, you yourselves will

keep in pace with the refrigeration systems of tomorrow, and in that way will be able to benefit not only by your own experiences and background, but by the people who will join you.

It is my opinion, and I believe the history of our country will bear my thoughts out, that our industrial leadership has been built by creating millions of jobs at the highest rate of pay in the world. The desire for improvement in performing these jobs establish openings for other people and new jobs which, in turn, always seem to create the never-ending chain of openings for others to come. This certainly should hold true for our refrigeration industry.

In conclusion I offer one word of caution—watch your credits. Bear in mind that your jobber or other sources of supply will only do business with you up to the point where they receive payment for the merchandise which you will receive from them. In the past it was possible for a service organization to purchase from a number of jobbers, at a slow rate of payment. Business men today are aware of the necessity of collecting for services rendered or merchandise shipped; and unless you are able to collect from your customers, so that you in turn will be able to pay your invoices, you might find yourselves with a lack of operating capital sufficient to run your business.

FIVE PER CENT PRICE INCREASE ALLOWED ON NON-ELECTRIC CONTROLS

AN ORDER permitting manufacturers of automatic non-electric temperature controls to increase their maximum prices by five per cent above October 1, 1941 prices has been issued by the Office of Price Administration. Resellers of this equipment are permitted to increase their prices by a percentage equal to their increase in cost of goods. Among the controls covered by the regulation are:

A. Thermostatic expansion valves: Thermostatic expansion valves with or without remote bulb, for use with all types of refrigerants.

B. Other refrigerant valves, for any type of refrigerant: Automatic expansion valves, constant pressure valves, back pressure valves, suction pressure regulating valves, refrigerant float valves.

C. Miscellaneous refrigeration equipment: Refrigeration water flow regulating valves, refrigerant relief valves, refrigerant distri-

butors, refrigerant dryers, strainers, filters, oil separators, heat exchangers, etc., refrigerant injectors.

The principal provisions of the regulation are:

Sec. 2.10 Automatic non-electric temperature controls—(a) Manufacturers' increase for items having an October 1, 1941, price. The maximum price for sales by any manufacturer of the types of automatic non-electric temperature controls covered by this section shall be his price to each class of purchaser in effect on October 1, 1941, increased by 5 per cent.

(b) Manufacturers' increase for items not having an October 1, 1941, price. The manufacturer may not increase his properly established maximum price for any automatic non-electric temperature control device for which he does not have an October 1, 1941, price without specific authorization from the Office of Price Administration.

A manufacturer desiring to modify his properly established maximum price for an automatic non-electric temperature control for which he does not have an October 1, 1941 price, shall file an application for such modification of his maximum price to reflect the increase obtained by other manufacturers for similar articles under (a) above.

(c) Resellers' prices. Any reseller may increase his maximum prices in effect on February 28, 1946, for the types of non-electric temperature control devices covered by this section to each class of purchaser by the percentage amount of his increase in acquisition cost resulting from the increase granted the manufacturer.

(g) The term "automatic non-electric temperature control devices" means those automatic non-electric control devices responsive to liquid level, temperature, pressure or humidity, and their related control devices and accessories, that have been especially designed for and normally used to control heating, ventilating, cooling, air conditioning, refrigeration and domestic water heating equipment. By "non-electric" is meant those control devices that are not actuated electrically nor whose principal function is the control of electrical circuits. Included are, however, those control devices that are fundamentally a functional part of a non-electrical control system and are used to connect operationally a non-electric control system to electrical equipment.

(OPA Maximum Price Reg. 591, Amendment 11 to Order 48. Effective March 1, 1946.)

GI ON-JOB TRAINING TO BE CONTROLLED BY VA

EMLOYERS will be discouraged from taking veterans for on-the-job training when there will be no jobs open for them after the training is completed, the Veterans' Administration announced.

The policy is designed to protect the veteran from exploitation and to prevent illegal payment of Federal funds.

H. V. Stirling, assistant administrator for vocational education and rehabilitation, cited examples of "suspicious" cases which have been reported from four state agencies, as indicating the need for the general tightening up of VA inspections.

A new order to VA field offices reads:

"No veteran shall be considered as pursuing a course of training on-the-job under Public Law 346 unless it is clear that the course of training is definitely outlined; will qualify the veteran directly for appointment to the position for which the training is being given and there is available or will be available the particular position to which the veteran will be appointed upon completion of the course."

As a result of this order, Mr. Stirling said, VA inspectors will insist on knowing whether it is the intent of the employer to provide a job for the veteran on completion of the training.

He said about 520 VA training officers will be required to cover the inspection program and that most of these already have been employed or are in the process of being employed.

Mr. Stirling said VA will report the findings of its training officers to the appropriate state agencies which are legally responsible for supervising the training establishments to be sure that the veteran is actually taking a bona fide course.

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REFRIGERATOR SHIPMENTS

REVISED figures indicate that approximately 123,000 domestic refrigerators were shipped in the month of January, about the same as December but only 39 percent of the base period rate of 309,000 units per month. Several of the large producers of refrigerators made no shipments after January 15 due to strike conditions in the plants. February shipments are expected to be lower than January due to the difficulty in obtaining steel and various component parts, and work stoppages prevalent in the industry.

YORK INSTITUTE OF REFRIGERATION GRADUATES FIRST CLASS

THE York Institute of Refrigeration and Air Conditioning graduated its first class on April 5. This class consisted of 80 commercial field service men who had completed a six-week course of instruction in the servicing of York commercial equipment.



The first graduating class of the York Institute of refrigeration

Due to the critical housing situation, community-minded York citizens opened their homes to these men who came to York from United States and foreign points as far distant as Santiago, Chile, and Melbourne, Australia.

S. E. Lauer, president of the York Corporation, which operates the Institute, officiated at the graduating exercises. He presented each man with his diploma and

congratulated the class upon their successful completion of one of the most highly developed short courses in the theory, operation, and maintenance of refrigerating and air conditioning known in the industry.

Mr. Lauer stated: "We feel that the York Institute of Refrigeration and Air Conditioning is an immense step forward in the history of York Corporation and we congratulate you men on being the first class to graduate."

\$\$\$

NEW YORK YMCA SCHOOLS EXPAND COURSES

THE New York YMCA Schools have leased 30,000 square feet of space to expand their Trade Courses consisting of Automobile Mechanics, Refrigeration, both basic and advanced courses, Radio instruction, both servicing and communication for FCC license requirements. In addition, advanced courses in radio including "FM" Television will also be offered, and a new course in Oil Burner Servicing.

The new location of the Trade School will be at 229-237 West 66th Street, occupying the entire building with a frontage of 125 ft. All trade courses are approved by the N.Y. State Department of Education and Veterans' Administration.

Guess I made my price a little too high, Jim.



WHOLESALE MERCHANDISING PLAN

(Continued from page 28)

reach-ins from \$600 to \$900; and the big walk-ins up to \$2000 for a single package—are waiting for industry to supply them.

Mr. Stern looks forward to getting this new package merchandising completely under way as soon as possible, and such packaged goods, he affirms, will be "sold just like an expansion valve, a roll of tubing or so many fittings." Some of the important dealers in the industry, he has found, have deprived the wholesaling organization of large unit sales. "If we cannot sell condensing units and coils," he states, "then we are forced to sell all the little items like tubing, controls and fittings, and there are



Counter and portion of stock in Spokane, Wash. store. Left to right: Lynn Wright, then Spokane manager, now newly named manager in charge of packaged goods with headquarters in Portland, Ore.; Walter Denny; Robert Thomas; and Mrs. Walter Denny.

not enough hours in the day to handle enough sales of these small items to make a profit." The packaged merchandising plan is the answer, the serviceman will be the salesman.

The staffs of the wholesale organization have worked with all manner of servicemen from its very inception. Now the serviceman working out of his home, out of a small store, a garage, or a basement, is to be further helped. He has no place to display equipment, or the new profitable packaged line for this new day in refrigeration, but he will have showrooms with nicely arranged articles displayed to the best advantage in the wholesale establishments of the five cities mentioned. These places will be for him, as well as the little items leading off from them where he will be left alone

with his customer to make the sale.

In the new 1946 merchandising plan, the wholesalers will be helping the same type of fellow, '46 Model, that they helped in '34, when they did all the figuring for the little servicemen who took their figures and sold the job on the strength of them. In the last swift years many of these men have become dealers—important merchants themselves—and some day the servicemen starting in now will wake up with a place of business, a storeroom, servicemen and salesmen and accounting departments of their own, built on packaged goods.

The plan should be fully launched by the fall of this current year, with 1947 a "hum-dinger" of a year in packaged merchandising. Mr. Stern states that now the main bottleneck to be breached is the shortage of electric motors, for that is the principle obstacle to securing sufficient commercial merchandise for the overall plan. He expects, however, the shortage of electric motors for refrigerators to be eased pretty soon.

§ § §

THE LOW SIDE

(Continued from page 29)

Reduction of the cut-out point will effect a colder coil and more moisture will be condensed from the air passing through the coil. The removal of this moisture dries out the produce and meats in storage.

The relationship between the coil and the volume of air being passed across it must be understood if the service engineer is going to balance temperature and relative humidity on an application.

If we put more air across a coil while maintaining all other conditions on the job constant, the suction pressure will rise, effecting a warmer coil. Slightly less heat will be extracted from each pound of air but as there will be more air, more heat will be removed. It is generally considered that for a 1% increase in the volume of air, there will be $\frac{3}{4}$ of 1% increase in capacity.

When we increase this air flow, the temperature of the box becomes satisfied more quickly and a higher relative humidity is gained.

To render this service to your customer, it will require the service engineer to do a little study for familiarity with the air properties, he will need a psychrometer and a velometer, which he may not now own. The return from this added knowledge will be not only financial but he will work with increased confidence in his own ability to do commercial refrigeration.



Shopping Comfort

...Defies Georgia's Summer Heat

for Customers of Large Macon

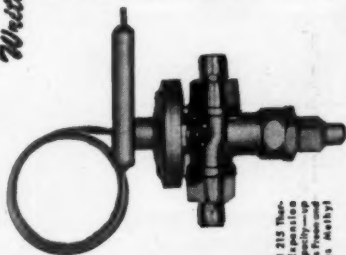
Store *... With  VALVES

...Denies Georgia's Summer Heat
for Customers of Large Macon
Store *... With **AP** VALVES
Controlling the Cooling System

TEN YEARS of highly dependable service in controlling the cooling system of a leading chain store in Macon, Georgia, is credited to A-P Refrigeration Valves by Macon's Brown-Starr Electric Co. who services the installation.

Wettes BROWN-STARR'S Mr. H. L. Brown:

"The job shown in the picture is the installation at a large store here in Macon. I have used A-P Valves on this job to control the cooling system for the last ten years. In the fifteen years I have been using A-P Valves, I have always found them to be very satisfactory."



A-P Model 215 Thermostatic Expansion Valve. Capillary up to 164 feet from and 21.1 tons Methyl Chloride.

Mr. H. L. Brown of Brown-Starr Electric Co., Macon, inspects store cooling system.

Because they afford a wide range of adaptability, every standard A-P Refrigerant Valve can be used on Air Conditioning, Commercial Temperature, and Low Temperature installations without need for special attachments or for changing valves. This permits the use of one standard A-P Valve to fit a wide variety of applications.

*Name on request.

**AUTOMATIC PRODUCTS
COMPANY**

2456 N. 32nd St., Milwaukee 10, Wisconsin

Export Dept.—13 E. 40th St., New York 16, N. Y.



DEPENDABLE Refrigerant Valves

Stocked and Sold by Good Refrigeration Jobbers Everywhere • Recommended and Installed by Leading Refrigeration Service Engineers

ELECTRICAL INSTRUMENTS

(Continued from page 33)

The thermocouple instrument has an unevenly divided or "square-law" scale, which in some applications is undesirable. While little can be done with the thermocouple itself to overcome this, modifications can be made in the millivoltmeter to give a substantially linear-scale indication. An easy way to do this is to so shape the magnetic pole pieces that the magnetic flux will be less when the coil moves toward the upscale position. A schematic view of such an instrument is shown in Fig. 42, and the resulting scale distribution is shown in Fig. 43. This weakening of the field, which lowers the instrument sensitivity as the coil moves upscale, tends to compensate for the square-law relation.

(Concluded)

§ § §

THE FISHKEEPER

(Continued from page 34)

humidity for the proper preservation of this very perishable commodity.

"In several trade magazine articles, it has been suggested that refrigeration contractors and merchandisers should sell the fish merchant the following equipment: (a) A refrigerated display case so arranged that crushed ice can be used to display the

fish, (b) a refrigerated walk-in cooler for above freezing storage, (c) a low temperature cabinet or cooler for below freezing storage for frozen fish and sea food, (d) an ice-maker to make the ice needed to display and to pack the fresh fish.

"You can readily see why the fish merchant has not been a buyer of refrigeration equipment. The investment is too great and very few retail fish stores could use the suggested equipment without getting into complete alterations of their present establishments.

"The answer to the problems of the fish merchant is to give him exactly what he needs; namely, ice for display, above-freezing and below-freezing storage, not in three or more fixtures but combined in one compact unit.

"The Bortz Fishkeeper is designed to do just that. It is a combination display and storage case which incorporates an ice-maker and an above freezing and below freezing storage compartment.

"Every fish merchant who has seen it has given it 100% approval. The case can be manufactured and sold at a fraction of the cost of three or more fixtures and is compact and practical in its design. The fish merchant has everything he needs in the line of refrigeration at a nominal cost, and it greatly adds to the appearance of his place of business."



A view of the newly opened, modern refrigeration supplies dept. of N. O. Nelson Co. in Memphis, Tenn. The new branch was opened April 1 at 690 Linden Ave. under the management of W. C. Easley. "We are operating and delivering the goods in any quantity," says "Bill" Easley.

STANDARD *Means* *Quality* *To the*

REFRIGERATION INDUSTRY

A complete line of efficient heat transfer products for refrigeration manufacturers, contractors, and service engineers



Model JS Evaporators

Stainless steel with concealed thermostat mounting bracket back of full length door. Sizes for 4 to 12 cubic foot refrigerators.



Water Cooled Condensers

Electrically welded shell enclosing copper water coil. Capacities for 1/4 H.P. to 3 H.P. Thoroughly cleaned —ready to install.

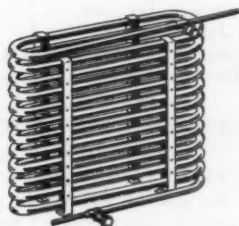
Receivers

Electrically welded and thoroughly tested.

Counterflow Condensers →

Designed for maximum capacity. Sizes ranging from 1/2 H.P. to 3 H.P.

ORDER THROUGH YOUR REFRIG-
ERATION SUPPLY WHOLESALER



Standard Refrigeration Company

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Refrigeration Service Engineers Society

Official Announcements of the activities of the International Society and Local Chapters appear in this department as well as articles pertaining to the educational work of the Society.



THE OBJECTS OF THE SOCIETY

To further the education and elevation of its members in the art and science of refrigeration engineering; for the reading and discussion of appropriate papers and lectures; the preparation and distribution among the membership of useful and practical information concerning the design, construction, operation and servicing of refrigerating machinery.

INTERNATIONAL HEADQUARTERS: 433-435 North Waller Ave., CHICAGO 44, ILL.

COMING CONVENTIONS

RSES Convention

Place: Hollenden Hotel.
City: Cleveland, Ohio.
Date: October 26, 27, 28, 29, 1946.
Secretary: H. T. McDermott, 483 N. Waller Ave., Chicago 44, Ill.

All Industry Exhibition:

Place: Cleveland Public Auditorium.
City: Cleveland, Ohio.
Date: October 29-29-30-31, 1946.
Exec. Secretary: R. Kennedy Hanson, 1107 Clark Bldg., Pittsburgh, Pa.

California State Assn.

Place: Hotel Fresno.
City: Fresno, Calif.
Date: May 11-12.
Secretary: Gerald S. Kennedy, P. O. Box 921, Sacramento, Calif.

Midwest Rwa Meeting

Place: Hotel Cosmopolitan.
City: Denver, Colorado.
Date: June 7 and 8.
Secretary: E. L. Bengston, 114 E. First Street, Davenport, Iowa.

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BAKERSFIELD, CALIF., FORMING CHAPTER

ON APRIL 10 refrigeration service men of the city of Bakersfield and Kern County met at Bakersfield for the purpose of considering the formation of a local chapter of the Refrigeration Service Engineers Society. W. W. Allison, president of the State Association and international director, called the meeting to order and Ralph Andrews was immediately nominated to act as temporary president. After some discussion a resolution was passed to the effect that

Kern County Chapter of RSES be formed.

The next order of business was the appointment of a nominating committee who returned later in the evening with their selection of temporary officers. Those elected were as follows: E. C. Flory, *President*; John Gray, *First Vice-president*; Sam Grove, *Second Vice-president*; Ray Stone, *Secretary*; Chet Trone, *Treasurer*; and Ralph Andrews, *Education Chairman*. Board of Directors—Sam Kliever, Brady Sasselli, Virgil Sutton, Lee Davies and P. B. Montgomery.

The chapter is to be known as Kern County Chapter No. 1. Application for a charter was signed by 28 members.

The constitution and by-laws were drawn up and approved by the chapter and initiation fees set at \$2.50 and dues at \$1.25 per month. Arrangements were made for the charter to be presented May 11 or 12 by the International Secretary H. T. McDermott, during the California State Meeting.

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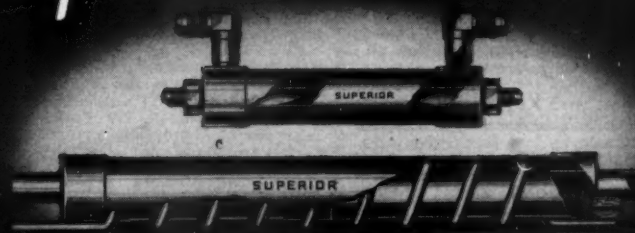
NEW CHAPTER AT LAKE CHARLES, LA.

ON MARCH 21, 1946, nineteen men of the Lake Charles area signed a petition for charter, under which they may form a chapter of the Refrigeration Service Engineers Society, to be known as Lake Charles Chapter.

E. A. Summer, International Director from Baton Rouge, La., called the meeting to order and explained the purposes and objects of the Society.

The charter will be held open for a short time permitting additional members to be entered thereon, but plans are being made at the present time for the charter presentation in the near future.

Superior ECONOMIZERS



★ Increase overall capacity.

★ Reduce running time up to 20%

... prevent sweating and frosting of suction lines, as well as oil slugging, and bring "on-the-line" jobs within the normal cycle range.

"Fractional Tonnage" ECONOMIZERS

... are no longer considered "unnecessary gadgets." Data now available substantiates all claims for appreciable increase in overall capacity. One should be installed in each evaporator circuit of every commercial and industrial refrigerating system. Pressure drop is negligible. Capacity per unit size is extremely high ... all joints are silver soldered.

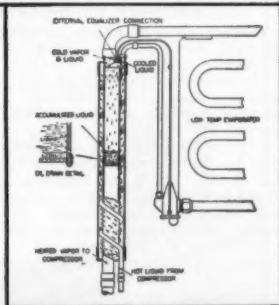
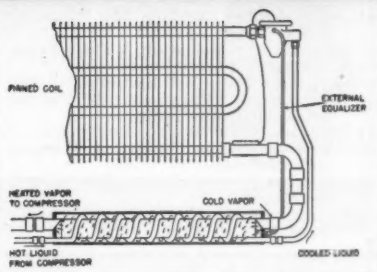
"Hy-K" ECONOMIZER-ACCUMULATORS

... have high ratio of prime to secondary, and liquid to vapor surface ... Positive vapor contact with all surfaces ... Maximum capacity per unit size.

"Hy-K" Economizer-Accumulators are equally suited for use in high, medium or low temperature systems.

If you haven't a copy of the new
Superior Catalog R-2, request one today.

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OFFICES IN PRINCIPAL CITIES • STOCKS: CHICAGO, ILL. • LOS ANGELES, CALIF. • JOBBERS EVERYWHERE

Refrigeration Educational Sound Films

Schedule of Showings

UNDER the supervision of the International Educational Committee, a set of 16 sound films, grouped into 12 showings and accompanied by a set of slides, are being circulated among chapters as a part of their educational program. Films are all of a practical nature on servicing refrigerating systems. Titles of the films and their identifying numbers and the schedule of showings are listed.

Film Titles and Key Numbers

No.	TITLE
360	Principles of Refrigeration
{ 438	Checking The System—Part I
{ 439	Checking The System—Part II
{ 440	Locating and Repairing Leaks
{ 441	Adding or Removing Refrigerant
{ 442	Removing and Installing A Compressor or Condenser
{ 443	Removing and Installing A Cooling Unit
{ 444	Adjusting and Checking The Expansion Valve
{ 445	Checking and Replacing A Float Valve
{ 446	Checking The Electrical System
{ 447	Quieting A Noisy Refrigerator
{ 448	Adjusting and Repairing The Thermo-Expansion Valve
{ 451	Servicing Water Cooled Condensers
{ 449	Adjusting Pressure Actuated Temperature Controls
{ 450	Adjusting Commercial Thermostatic Controls
{ 452	Making and Repairing Tubing Connections

Schedule of Showings

AKRON, OHIO.—Akron Chapter: June 12—No. 446. Contact F. J. Roller, 357 S. Maple St., Akron 3, Ohio.

AURORA-ELGIN-JOLIET, ILL.—Tri-County Chapter: May 18—No. 438-439. June 15—No. 440-441. Contact B. V. Clark, 612 N. May St., Aurora, Ill.

BATON ROUGE, LA.—Louisiana Chapter: June 7—No. 440-441. Contact E. A. Summer, 3867 N. 33rd St., Baton Rouge 5, La.

CHARLESTON, W. VA.—Charleston Chapter: June 11—No. 438-439. Contact H. G. Frame, 1105 Washington St., W., Charleston 2, W. Va.

CHICAGO, ILL.—Chicago Chapter: June 11—No. 442. Contact D. D. Orr, 332 S. Hoyne Ave., Chicago, Ill.

COLUMBUS, OHIO.—Columbus Chapter: June 12—No. 442. Contact H. Grossman, 22 W. Naghten St., Columbus, Ohio.

DAVENPORT, IOWA.—Mississippi Valley Chapter: June 4—No. 443. Contact J. Vinje, 529 W. Second St., Davenport, Iowa.

DAYTON, OHIO.—Dayton Chapter: June 13—No. 443. Contact R. E. Warner, % Allied Supply Co., 359 W. Monument Ave., Dayton, Ohio.

DENVER, COLO.—Mile High Chapter: May 20—No. 440-441. June 17—No. 442. Contact R. C. Kimmel, 1524 15th St., Denver 17, Colo.

DUBUQUE, IOWA.—Key City Chapter: June 5—No. 442. Contact R. E. Mueller, Stampfer Farm & Home Store, 7th and Iowa, Dubuque, Iowa.

EVANSVILLE, IND.—Evansville Chapter: May 23—No. 438-439. Contact C. E. Goad, 11 Main St., Evansville, Ind.

FORT WORTH, TEXAS.—Cow Town Chapter: June 13—No. 438-439. Contact P. D. Cato, Texas Refn. Supply Co., 1410 Commerce St., Fort Worth, Tex.

GRAND RAPIDS, MICH.—Furniture City Chapter: June 4—No. 442. Contact M. D. Thiebout, % Consumers Power Co., 450 Market, S.W., Grand Rapids, Mich.

HUNTINGTON, W. VA.—Tri-State Chapter: June 11—No. 440-441. Contact A. W. Albertsen, 314 Eleventh St., Huntington, 14, W. Va.

KANSAS CITY, MO.—Kansas City Chapter: June 5—No. 443. Contact C. R. Visger, 7715 Brooklyn, Kansas City, Mo.

LANSING, MICH.—Wolverine Chapter: May 27—No. 442. Contact R. Kellogg, 616 Jessop Ave., Lansing, Mich.

LONG BEACH, CALIF.—Long Beach Chapter: June 12—No. 360. Contact Van's Supply, 250 E. 12th St., Long Beach, Calif.

LOUISVILLE, KY.—Colonels Chapter: May 16—No. 442. Contact J. M. Berry, % F. H. Langsenkamp Co., 339 W. Main St., Louisville 2, Ky.

MADISON, WIS.—Madison Chapter: June 13—No. 443. Contact Refrigeration Maintenance Corp., 731 University Ave., Madison 5, Wis.

MONTGOMERY, ALA.—Montgomery Chapter: May 20—No. 438-439. June 17—No. 440-441. Contact W. C. Goodwin, 8 Forest Ave., Montgomery, Ala.

NEW HAVEN, CONN.—Elm City Chapter: June 6—No. 438-439. Contact T. B. Howell, United Illuminating Co., 221 George St., New Haven, Conn.

OMAHA, NEB.—Missouri Valley Chapter: May 16—No. 440-441. Contact C. M. Flohr, % United Motors Serv., 27th Ave. and Harney St., Omaha, Neb.

PEORIA, ILL.—Illinois Valley Chapter: June 14—No. 360. Contact Bryson Roth, 300 South Washington St., Peoria, Ill.

READING, PA.—Reading Chapter: May 21—No. 360. June 18—No. 438-439. Contact O. A. Larson, % Larson Supply Co., 326 Buttonwood St., Reading, Pa.

ROCKFORD, ILL.—Rockford Chapter: May 20—No. 442. June 17—No. 443. Contact L. L. Sturch, 1915 Vernon St., Rockford, Ill.

SACRAMENTO, CALIF.—Sacramento Valley Chapter: June 6—No. 360. Contact George M. Bale, % Assoc. Refr. & Equip. Co., 1717 Eye St., Sacramento 14, Calif.

SALT LAKE CITY, UTAH.—Beehive Chapter: May 23—No. 447. Contact W. W. Walker, % G. E. Supply Corp., 310 W. 2nd South St., Salt Lake City, Utah.

Temprite ACCESSORIES CUT OPERATING COSTS AND INCREASE EFFICIENCY!

The Temprite "Oilrite" automatic oil separator retains the compressor oil in the crankcase, permits the refrigerant to work at its true boiling point, increases



Oilrite Oil Separators

heat transfer of the evaporator and prevents scored parts and burned bearings. Sizes from $\frac{1}{8}$ H. P. to 60 tons.

Temprite equalizer tanks eliminate short cycling of the condensing unit by storing refrigerant gas on the suction side of the system. Reduces wear on motors, belts and controls and also reduces power consumption.



Equalizer Tanks

The Temprite accumulator interchanger traps and evaporates any liquid refrigerant that may spill over from the evaporator. A liquid line, suction line heat exchanger which increases system capacity and prevents damage to the compressor.



Accumulator-Interchangers

Temprite two temperature valves assure *accurate* control of evaporator temperatures. Extremely rugged and extra sensitive, these valves have large capacity and a wide range of adjustments.



Two-Temperature Control Valves

TEMPRITE PRODUCTS CORP.

Originators of Instantaneous



Liquid Cooling Devices

45 PIQUETTE AVENUE

DETROIT 2, MICHIGAN

SPRINGFIELD, MASS.—Western Massachusetts Chapter: May 28—No. 360. Contact Harold C. Lambert, Room 449, 31 Elm St., Springfield 3, Mass.

TOLEDO, OHIO—Greater Toledo Chapter: June 12—No. 452. Contact Paul D. Sizer P. O. Box 69, 1216 Adams St., Toledo, Ohio.

TULSA, OKLA.—Oil Capital Chapter: May 29—No. 442. Contact R. W. Palmer, 820 E. 3rd St., Tulsa 3, Okla.

WATERLOO, IOWA—Cedar Valley Chapter: May 22—No. 440-441. Contact J. Adams, % Herbert Refr., 719 Lafayette St., Waterloo, Iowa.

WILKES-BARRE, PA.—Wyoming Valley Chapter: June 10—No. 447. Contact A. Reese, 104 Slocum St., Forty Fort, Pa.

§ § §

NEW CHAPTER IN ORANGE COUNTY, CALIF.

WEDNESDAY evening, February 13, a meeting of refrigeration men of Orange county was called for the purpose of forming a local chapter of the Refrigeration Service Engineers Society. It was held at Lee's Drive-In banquet room, Santa Ana, with 36 men in the refrigeration business present, most of them bringing their wives. The meeting was conducted by William Allison of Los Angeles, state president of the Society.

A petition was made for a charter with 32 members signing it. Election of officers was completed with the following named: Merle A. Soden, Anaheim, *President*; Harry Fox, Anaheim, *First Vice-president*; Tom Markham, Santa Ana, *Second Vice-president*; Jim Robinson, Fullerton, *Secretary-Treasurer*; and Virgil A. Payan, Santa Ana, *Asst. Secretary-Treasurer*.

Plans have been completed for the charter presentation on May 9th at Santa Ana, at which time International Secretary H. T. McDermott will be present.

§ § §

R.S.E.S. Chapter Notes

TRENTON CHAPTER

Trenton, N. J., March 20—Dave Loria, home on leave from the army, was a guest of the evening. Among the committee reports received, Al Koller, chairman of the ordinance committee reported favorable progress, and the banquet committee reported most of the details completed and tickets on sale with the returns fair.

Eleven applications for membership were received from Phillip J. Reuter, Anthony J. Nadonly, Alvin E. Gunsche, Harold Lon-

dahl, Roy Beans, George R. McCabe, Joseph Rura, Frederick B. Burd, Jr., Robert D. Dalrymple, Gerald Schwartz and Robert W. Smith.



Mueller Brass Soldering Contest conducted by Francis House at the meeting of Trenton chapter March 20. Left to right are: Francis House, Mueller Brass Co.; Joseph Rura, winner of the contest; Orville Kreutziger, Mueller Brass; George Frie, President, Trenton Chapter; J. Herbert Jaeger, Jaeger Sales and Supplies.

The secretary reported that the series of films being distributed by the National Society would start their showing in the chapter soon. Certificate examination was being planned for a forthcoming meeting.

On completion of the business portion of the meeting, president George Frie turned the meeting over to the educational committee who conducted a lively half hour open discussion on service problems. Following this the meeting was turned over to Francis House of Mueller Brass Co. who presented an interesting talk on soldering, then conducted a soldering contest. Winner of the contest was Joseph Rura.

BOSTON CHAPTER

Boston, Mass., March 12—After a brief business session the meeting was turned over to Mr. Stenmark, chairman of the educational committee, who introduced Mr. Austin of Dewey & Almy Chemical Co. Mr. Austin presented some interesting pictures on food processing and locker storage plants, following it with a discussion on the packaging of preserved and frozen foods.

New members accepted during the meeting were: Joseph A. Canavan, Burlington, Vt., Joseph Couto, Woburn, Mass., John S. McCormick, Somerville, Mass., Walter E. Hanhy, Brockton, Mass., Franklin M. Colcord, Melrose, Mass., Rosario A. Patti, Methuen, Mass., Joseph M. Patnaude, New Bedford, Mass., Albert A. Dugas, Lynn,

HOMESICK CYLINDERS

If cylinders could sing, a hit
tune in their repertoire
would be "Carry Me
Back to Old Virginia."

It's a mighty empty feeling to
be a long, long way from
home, with nothing
to do — but there's
plenty of work waiting
for VIRGINIA Refrigerant
cylinders; so have a

heart, Mister. If

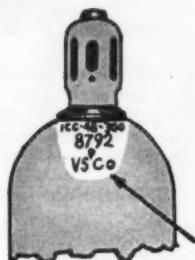
there's an empty, home-
sick cylinder around
your place, have a look
on the shoulder . . .

If you find "VSCo" stamped
there, please start it on
its way back to
VIRGINIA, home of

EXTRA DRY ESOTO
(Liquid Sulfur Dioxide)

and

V-METH-L (Methyl Chloride)



Look for
"VSCo"
on the shoulder

Distributors of "Freon" Refrigerants
11, 12, 21, 22, 113



VIRGINIA

SMELTING COMPANY

WEST NORFOLK, VIRGINIA
NEW YORK • BOSTON • DETROIT

Mass., John R. Thomas, Roslindale, Mass., and Robert E. Couture, Boston, Mass.

New applications for membership received: Clayton M. Young, Braintree, Mass., James P. Duffy, Brighton, Mass., Wm. A. Clarke, Lynn, Mass., Anthony Dell Orfano, East Boston, Mass., and Samuel Goldmeer, Roxbury, Mass.

April 9—On the educational program Messrs. Huntley and House gave an interesting talk on driers. During the business session which followed, seven new members were accepted to membership. They are: Lawrence F. Cincotta, Somerville, Mass., Vincent G. Keblin, Boston, Mass., Douglas H. Fama, Medford, Mass., Anthony Dell Orfano, East Boston, Mass., Clayton M. Young, Braintree, Mass., Lester R. Wall, Charlestown, Mass., and Geo. N. Ackerman, Jr., Brighton, Mass.

KANSAS CITY CHAPTER

Kansas City, Mo., March 6—The educational chairman made an announcement of forthcoming educational programs and the entertainment committee reported on a dinner dance scheduled for the month of May.

On the educational program of the evening the second in the series of films, circulated by National Society, entitled "Testing the System," was shown with slides and accompanying discussion following.

BIRMINGHAM CHAPTER

Birmingham, Ala., April 17—A basket supper and dance was held at the Fairfield American Legion Hut. There were fifty in attendance and everybody had a fine time.

MISSISSIPPI VALLEY CHAPTER

Davenport, Ia., April 2—Meeting was held at the Brammer Mfg. Co. at Davenport, Ia. The meeting was called to order by President E. Meyer, and roll call showed an attendance of 35 members and 10 visitors. New members accepted by the chapter included: Ray Breckenridge, Lester Erwin, Elmer Hay, Charles Liftebarger, Merrill O'Melia, Charles Roberson, Lawrence Roesch, Kenneth Schroeder, Arnold Tran-
low and Hiram Willetts.

A report was received from the program committee on the progress made in booking a complete program for each meeting in the coming year. Movies on refrigeration service were then shown, followed by two entertainment movies, one on South America, and one on the Hudson Bay region.

MILE HIGH CHAPTER

Denver, Colo., March 18—Immediately after the meeting was called to order the film entitled "Principles of Refrigeration," the first in the series of twelve to be shown during the year, was presented to the audience. Thirty-one members and thirty-seven visitors were present for the showing, eighteen of whom were from Opportunity School. Considerable interest was shown in the film and all expressed the desire to see the balance of the series.

The rest of the evening was spent in a general discussion, an interesting part of which was the results of a question put to students present, "Why are you studying refrigeration?"

ROCKFORD CHAPTER

Rockford, Ill., March 4—Twelve members were present for this meeting at which some discussion was had on the advisability of changing the price guide compiled by the chapter. Announcement was made that the chapter is endeavoring to secure the series of films, provided by the National Society, for showing at future meetings of the chapter. Leslie Sturch won the door prize of the evening.

SAN DIEGO CHAPTER

San Diego, Calif., March 21—Much interest was shown in the coming convention of the California Assn. of RSES which will be held in Fresno on May 11 and 12. Ralph French, a member of the board of directors of the Association and M. R. Hanks, treasurer, extended an invitation to all members to attend the convention, and although Fresno is nearly 400 miles from San Diego, about 15 members agreed to make the trip.

Al Becker, a representative of a fire control equipment company gave a talk on fire control and prevention with a demonstration of his apparatus.

The real feature of the evening was a tube bending contest conducted by Gordon Duerr, a representative of the Imperial Brass Co. After a copious amount of perspiration and some very choice swear words, Oscar (Red) Estes emerged the winner with Joe (Frigidaire) Styles a very close second. Leonard (Benny) Benintende ended up in third place and there were several "also rans" who found that $\frac{1}{2}$ inch tubing could not be bent at right angles without kinking. A deluxe set of flaring and cutting tools was presented to the winner and second and third received a set of flaring tools and a tubing cutter respectively.

\$105,000.00 AIN'T HAY!

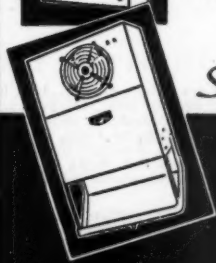
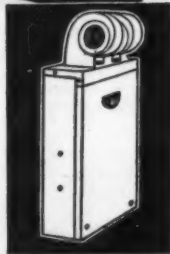
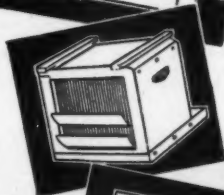
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for additional equip-
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trying to keep up with
the demand for Filter-
pure Cooling Units**

AND

**We have contracted
for \$35,000.00 more
tools and machinery
for delivery August 1
to further increase
production.**

Sold by Leading Refrigeration Wholesalers

**BETZ CORPORATION
HAMMOND, INDIANA**



FIRST MEETING OF MICHIGAN STATE ASSOCIATION



LANSING GROUP—L to R, back row: D. J. Renwick, Glen Ormsby, Steve Pannik, Glen Cripps, Roy Rulison, Cecil Stevens, Claude Watson, Clyde Grubb. Middle row: Evert Emery, Albert Gary, Ken DeKubber, L. J. Christman, Fredrick Stevens, Wilburt Plankenhorn, Howard Rundle, John Rundle, Clara McNoughton, Rial Kellogg. Front: Fay Remus, Lawrence Burt, Sidney Ferrin, Robert Rulison, Willard Baker, John Bush.



FLINT GROUP—L to R, top row: L. Getler, F. Kithcart, J. Diatz, T. B. Mansfield, C. O'Heron, A. Lifsey, C. Babcock, A. Gardner, W. Holmes, A. Boyer. 2nd row: F. Grice, E. Flood, C. Morgan, C. Crawell, D. Fortune, G. Short, W. Frask, E. Hansen, A. Hoose, W. Henderson, J. Green, G. Abramson, E. Shand. Kneeling: N. Gunnell, J. Hefly, H. Stansfield, S. Fillingham, O. Dobbs, P. Duncan, P. Laudan, E. Babcock.



SAGINAW GROUP—L to R, back row: Francis Donoghue, V. V. Niles, Chas. H. Earl, L. J. Murphy, Kenneth Hager, Dave Robbins. 2nd row: Burt Clark, George Byron, Vernon Dingman, S. C. Bortle, W. J. Culver, Frank Losee, Art Kimmel. Kneeling: Hank Walters, Bill Little.



ANN ARBOR GROUP—L to R, top row: Clifton Crandall, Ford Ellinger, Fred Lorenz, Harry Ingall. Bottom row: Unidentified, Meredith C. Steele, Ernest Chasten, Robert Simmons.



GRAND RAPIDS GROUP—L to R, back row: Peter Hendrikse, Mike McCus, John Terpstra, Martin Bonetake, Benj. F. Harris. Front row: John Hendrikse, Elwood Fry, Robert Dunn, Clarence W. Harris, Kenneth Henry.

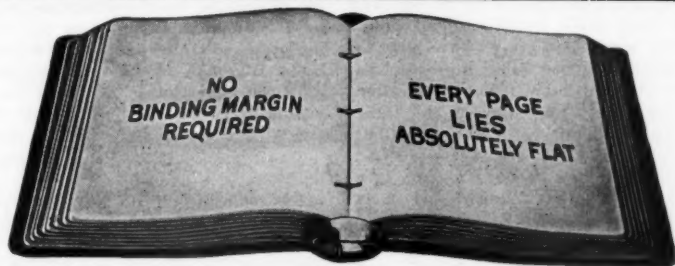
Pictured left, are visitors present. L to R, back row: Austin Jones, Kerotest Mfg.; Clarence Buschkopf, International Sacy.; unidentified; William Meddler, Gilmer Belt; unidentified; Ed Kellie, American Injector. Front row: John Trix, American Injector; unidentified; unidentified; Charles Earl, Alpha Elect.; R. H. Potter, Refrigeration News.

Held in St. Johns, Mich., Steel Hotel, March 25, the first meeting in the formation of the State Association was attended by more than 100 members. John J. Bush, secretary of the Wolverine Chapter, Lansing, Mich., was elected chairman and C. H. Earl, president of the Saginaw Valley Chapter, elected secretary. These men, and a committee from each chapter, will complete details to be submitted at the next meeting. There was a steak dinner and entertainment during the evening. Pictures taken by Austin Jones, Kerotest Mfg. Co., of the various groups in attendance appear above.

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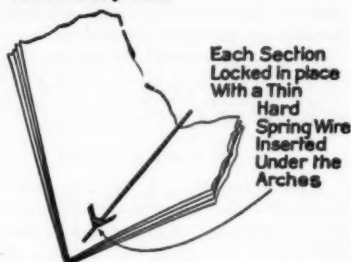
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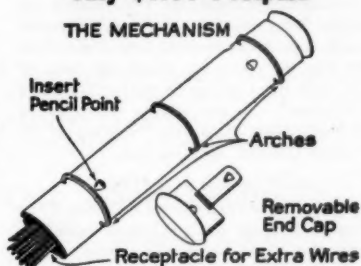
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READING CHAPTER

Reading, Pa., March 19—Seventy members and guests attended this meeting, headlighted by a talk and demonstration presented by Israel Kramer of Kramer Trenton Co. on Thermobank, a blower coil for low temperature work, which automatically defrosts itself without use of electric heaters, water spray or brine spray. It is done through the use of reverse cycle refrigeration. As an education program Mr. Kramer's talk proved most interesting.

April 16—This meeting was designated "Detroit Lubricator Night." J. M. Strauss appeared with three training sound films. While they were elementary, there were a good many things about these films that we feel were of great value to a refrigeration service engineer. The titles of the three films were: 1. Principles of Refrigeration; 2. Servicing Automatic Expansion Valves; 3. Thermostatic Expansion Valves. An open discussion period followed and many questions were answered.

ELM CITY CHAPTER

New Haven, Conn., March—So much proof was recently exhibited to show this chapter really is alive that a publicity man has been appointed to give the results to other chapters. A raffle of a case of "liquid sunshine" filled the coffers, brought a smile to the treasurer's face and resulted in 55 members assembling at the Garde Hotel for the annual stag dinner. After a meal of fried chicken (it said on the menu) an enjoyable floor show was given. (Rumors next day were around that Yale University was complaining about the loss of some of their pet pigeons from the "Green.") The "chicken" on the plates disappeared and at least one fellow, our "Smiling Irishman" John Bendel, had seconds.

MILWAUKEE CHAPTER

Milwaukee, Wis., April 2—Chairman Felix Wierman talked on the subject of membership in the state association and urged members to join. Paul Reed gave an interesting account of his visit to the Canadian convention. Clarence Buschkopf made mention of a new chapter being formed in the state and suggested members make a habit of visiting these chapters in order to create closer relationship between them.

Some time was spent in discussing future educational programs with some worthwhile suggestions being made. Mr. Hart of Texaco Oil Co. gave a talk on oils used in refrigeration.

CHARLESTON CHAPTER

Charleston, W. Va., Apr. 9—During the meeting seven applications for membership were received and voted upon by the membership. All were accepted. On the educational program a motion picture on the history of bread making, presented by the Conlon Baking Co., was shown. K. P. Rupe, a member of the chapter, was instrumental in securing this picture.

FOX RIVER VALLEY CHAPTER

Fond du Lac, Wis., April 3—A report on the Wisconsin State Convention was given by E. Mueller and an open discussion on the proposed state code occupied some time. Felix Wierman of Herman Goldberg Co. gave an educational talk on seals, which was informal but enjoyed by all. Refreshments were served following the meeting.

LOS ANGELES CHAPTER

Los Angeles, Calif., Feb. 27—The meeting opened with a dinner, following which Mr. Wheaton of Pittsburgh Chemical Co. discussed methyl chloride and sulphur dioxide. His talk was on the uses of these gases and handling of them in drums which did not carry the I.C.C. stamp of approval. Comments on his talk and concluding remarks were made by Merle Stutzman.

During the business session Mr. Allison gave a report on the organization of the state association and Harold Halls suggested that the chapter ratify the proceedings of the Fresno meeting and become a member of the state association.

Six new applications for membership were received from W. S. Moore, Nick Van Dyke, Floyd S. Lang, George H. Nelson, Joseph B. Dupen and Lewis S. Windsor.

TRI STATE CHAPTER

Huntington, W. Va., Apr. 9—During the business session the chapter approved plans for the showing of the series of films circulated by the National Society, and arrangements were made to rent a projector for the purpose. The first of the series of films was shown at this meeting.

MIAMI CHAPTER

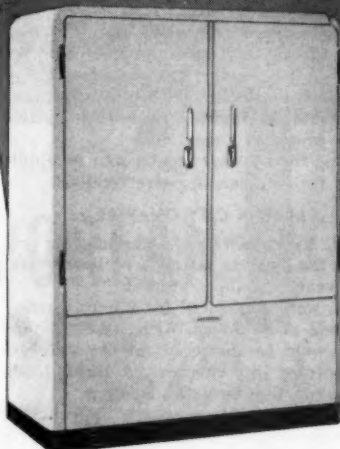
Miami, Fla., March 14—The electrical code for the city came in for a good deal of discussion. Various appointments to committees were made by the president and Messrs. Brophy and Chauncey were elected to the Board of Directors. Seven new members were accepted to membership.

THE WESTINGHOUSE POSTWAR REACH-IN REFRIGERATOR

- NEW FEATURES
- NEW DESIGN
- POWERED by the famous Westinghouse Hermetically-Sealed Refrigeration Unit

You'll have many new and improved features to sell in the postwar Westinghouse Reach-in Refrigerators—real advantages in today's market. For example, the exclusive Flow-trol system of air circulation. Its unusually large coil surface and relatively high coil temperature keep coils frost-free and insure proper humidity at all times. Gentle forced air circulation provides uniform temperature throughout the cabinet.

These models are powered by the famous hermetically-sealed condensing unit, developed and pioneered by Westinghouse. No belts to break—no shaft seals to leak—lifetime oil supply sealed in—dust and dirt sealed out . . . features which provide your customer with time-proved dependability . . . real sales values.



A Westinghouse Reach-in Refrigerator is but one of a complete line of Packaged Refrigeration Products. The Westinghouse franchise will give you the sales and profit opportunities of this complete line.

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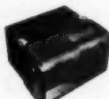
Refrigeration Specialties Dept.

Springfield 2, Mass.

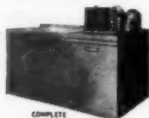
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AKRON CHAPTER

Akron, Ohio, April 10—Fifty-six members were present at this meeting, which included one of the longest programs of its history. The program started with the showing of film No. 360 and accompanying slides which are distributed by the National Society. Next was a talk by Byron Halsted on a new type water cooled condensing unit. This was followed by S. G. Coggin and Paul Baucher of Detroit Lubricator Co. who presented a wire recording, with slides, on expansion valves from the first one made to the latest models produced today.

During the business session six new applications for membership were received.

MOTOR CITY CHAPTER

Flint, Mich., March 12—The meeting was held in the business quarters of Bert Clark, with twenty members present.

Plans were announced for a joint meeting to be held at St. Johns, Mich., at which time a bus would be chartered for the members of the Motor City chapter. A Dutch lunch was served following the meeting.

April 9—The business session centered around the chapter's efforts to secure a permanent meeting place. The educational chairman reported on progress being made in securing a future educational program. Part of this program will be the sound films provided by the National Society. A report of the trip to St. Johns, Mich., was given by the secretary and after adjournment the door prize was awarded.

DAYTON CHAPTER

Dayton, Ohio, March 14—A city code for refrigeration was again discussed and a new committee appointed to follow up on this matter. The educational program included the showing of the second in the series of educational films circulated by the National Society.

March 23—With the chapter growing and the membership now reaching forty members, it was decided that additional chairs would have to be purchased.

The educational program consisted of the showing of the General Electric Research Foundation film on frozen foods.

TWIN CITIES CHAPTER

Minneapolis, Minn., March 5—Arrangements were made at this meeting for several carloads of members to visit the opening meeting of the Duluth Chapter. Art Palen took charge of the arrangements, listing those who wish to attend.

Twelve new members were admitted to membership as follows: John A. Herber, Byron L. Swenson, Walter H. White, W. H. Pohl, E. B. Madson, J. E. Krum, T. F. Franson, H. F. Baruth, Carl E. Ohlsen, N. G. Miller, L. H. Gilbert and Horace T. Stone.

There was considerable discussion on the local license law in regard to the examination given to refrigeration men who apply for Journeymen and master licenses. Fred Phillips felt that they were not being conducted in a strict enough manner. Art Palen explained the manner in which the examinations are held and said that under the present circumstances the examining board was doing a very good job, and that there will be considerable improvement in the holding of these examinations in the future. It was suggested that the refrigeration service men cooperate with the local inspector in the policing of the license law.

WESTERN MASSACHUSETTS CHAPTER

Springfield, Mass., March 12—After a brief business session the meeting was turned over to H. C. Lambert who gave a talk on frozen foods much enjoyed by the membership.

March 26—Jim Cargel entertained the group with a talk on large multiple installations which he has helped to install.

FAIRFIELD COUNTY CHAPTER

Stratford, Conn., March 11—The chapter voted to become a member of the New England States Association at this meeting. A corresponding secretary was appointed as an aid to the secretary of the chapter and the treasurer's and secretary's reports were received. On the educational program a representative of the Penn Control Co. gave a talk on water valves.

SUNSHINE CITY CHAPTER

St. Petersburg, Fla., April 2—After a brief business session the meeting was turned over to the educational committee with Mr. Salter presiding. The program consisted of a questions and answers period and a discussion on lectures 4 to 9 inclusive. This was followed by an explanation of a water heater element and control manufactured in Tampa under the name of Fugal. The talk was given by R. B. Schroeder.

METROPOLITAN NEW YORK CHAPTER

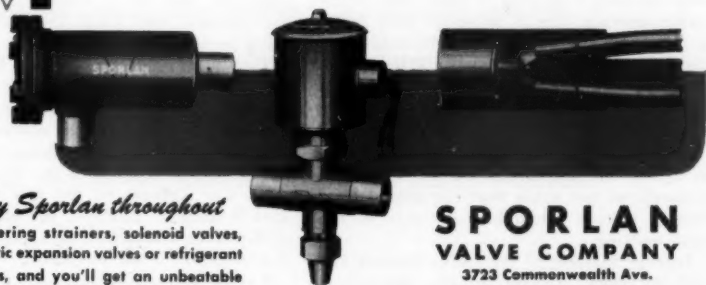
West New York, N. J., March 15—Eight new applications for membership were approved and the following accepted for mem-

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Comfort Cooling Installations

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Only Sporlan offers you thermostatic expansion valves with selective charges... each to do a specific job. So don't just ask your wholesaler for a valve... ask him for a Sporlan valve, selectively charged to give you peak performance on any size installation.



Specify Sporlan throughout
when ordering strainers, solenoid valves,
thermostatic expansion valves or refrigerant
distributors, and you'll get an unbeatable
combination of perfect performers!

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bership: Charles Bermel, William C. Mald, Frank Berk, Alphonse Beaudoin, Irving Arnold, Nicholas Arlotti, Leo Adelson and Milner Grant.

Israel Kramer of Kramer Trenton Co. of New Jersey, presented an interesting lecture, illustrated with slides, on the Thermobank system of refrigeration. The presentation occupied some time and questions and answers on the system followed.

The charter of the chapter has now been closed so that no additional names can be added to it. Plans are being made at this time for the charter presentation.

SCRANTON CHAPTER

Scranton, Pa., March—Following the business session, chairman of the educational committee, William Franklin, announced the forthcoming schedule of motion pictures to be shown in the chapter, the first of these to be shown on Wednesday, April 3, and on the first Wednesday of each month thereafter. It was also agreed to hold two meetings a month in the future; the first to be for the showing of films and the second for manufacturers representatives, business and social affairs.

The annual election of officers at this meeting resulted as follows: Joe Gallagher, *President*; George Albig, *Vice-president*; Chris G. Hess, *Secretary*; William Schuler, *Treasurer*; and Wm. Franklin, *Educational Chairman*.

TRI-COUNTY CHAPTER

Aurora, Ill., Apr. 20—Nineteen members and nine visitors were present at this meeting at which time the film "Principles of Refrigeration" and accompanying slides were shown. It proved to be a very interesting meeting, due in no small part to R. L. Hendrickson who led the discussion on the slides. It also proved that a little review now and then is good for everyone.

MONUMENTAL CHAPTER

Baltimore, Md., March 13—Meeting called to order by President Patten. An announcement was made that the annual election of officers would be held over to the next meeting.

Harvey Hamlet of the Gates Rubber Co. was the guest speaker on the educational program. Mr. Hamlet showed the members views of the factory and operating practices in the manufacturing of belts, tires, hose, etc. A great deal of interest was displayed in this talk.

News From— The Dispatcher

WILLIAM J. WRIGHT, a veteran, has opened up a new business in Pacific Grove, Calif., under the name of The Grove Refrigeration Company, 211 Forest. His training was received through a course given by the General Electric Co. of San Francisco. He worked for this company four years.

C. A. TWISSELMAN is opening a refrigeration repair business at 1687 Lincoln Way, Auburn, Calif., under the name of the Auburn Refrigeration Service. He is experienced in repair work, having served two years as a civilian employee of the United States Army in this line, and engaged in the refrigeration business for seven years.

ROBERT E. WILLEY has started his own refrigeration service at 920 Coast Blvd., Newport Beach, Calif., serving both commercial and domestic users of refrigeration. He was formerly in the refrigeration business for nine years before the slight interruption which he calls "my Navy career."

EARL WHEELER, a senior refrigeration mechanic with the air corps, has been discharged, and opened a new refrigeration sales and service agency known as the Wheeler Supply Co., 107 S. Mississippi St., Ada, Okla. He has secured the Frigidaire agency.

THE GUENTHER ELECTRIC SHOP, Beaver Dam, Wis., is offering a complete service on home refrigeration. Not only are freezers sold or built to order in homes, but the shop also maintains a complete service department and offers frozen storage space for patrons' use while their freezers are being repaired.

THE EXCELSIOR EQUIPMENT CO., 308 S. Clinton St., Syracuse, N. Y., has been incorporated for the sale and servicing of commercial refrigeration equipment. The new company was formed by taking over the assets and business of the Waters Equipment Co. Officers of the new corporation are: William J. LaPloof, president; Martin J. Rose, vice president and treasurer; and Raymond J. Wall, secretary.

FRANK DEPAGNIER and his brother, WALTER, recently entered into a refrigeration service business partnership at 670 E. 180th Street, Bronx, N. Y. Walter was recently discharged from the army after 38 months' service.



*Accurate—
Dependable—
Simple to Install . . .*

THAT'S WHY WHITE-RODGERS CONTROLS ARE

Specified BY MANUFACTURERS... *Preferred* BY SERVICE MEN

White-Rodgers temperature and pressure controls are so easy to install, so accurate in operation and dependable under even exceptional conditions, it will pay you to use them for every commercial refrigeration or air-conditioning application.

Manufacturers specify White-Rodgers controls because they give their products peak efficiency and customer acceptance. Service men prefer them because they eliminate installation difficulties and simplify adjustment.

For manufacturer—service man—and user, White-Rodgers controls always give complete satisfaction. Write for refrigeration control catalog and complete information.



WHITE-RODGERS ELECTRIC CO.

ST. LOUIS 8, MISSOURI

Controls for Refrigeration • Heating • Air Conditioning

New and Improved Appliances

Addresses of Manufacturers represented in this department can be obtained from the Editor

Alco "Thermo-Limit" Valve

THE "THERMO-LIMIT," a radical new improvement in the thermostatic expansion valve, has just been announced by the Alco Valve Co., St. Louis, designers and manufacturers of automatic refrigerant control devices.

Made at present to apply in the field of smaller commercial refrigeration, and covering a nominal range of "Freon-12," for instance, of $\frac{1}{4}$ ton to $1\frac{1}{2}$ tons, the outstanding feature of the new valve is the automatic limitation of evaporator or suction pressure. This eliminates the heavy overload on the

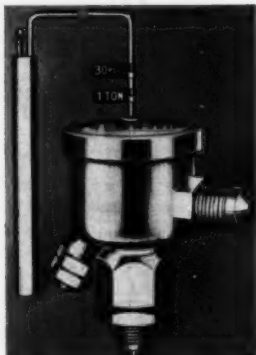
bellows, a valve push-pin, and a spring, and partially takes the place of the cage assembly in the more conventional Thermo valve. A selection of cartridges, each charged to a predetermined pressure, such as 10, 15, 30, 45, or 55 lbs. per square inch, are interchangeable on the job.

Excessive pressure built up in the low side of a system during the "off" cycle reacts on the cartridge bellows, closing the valve when the predetermined evaporator pressure is reached. When the compressor starts, the valve remains closed until the evaporator pressure is reduced below the valve setting. As the pressure is further reduced, the valve begins to open and gradually shifts from pressure control to the normal function of superheat control.

This type of control has been accomplished heretofore by the gas-charged or partially-charged valve. The Thermo-Limit, with liquid charge, has none of the limitations of the gas-charged valve, and may be installed anywhere in the refrigeration system and in any position.

A related assembly to be carried in stock on wholesalers' shelves and sold separately is the "service kit," containing a variety of these interchangeable parts, enabling service engineers to carry a minimum number of valves in stock. It includes six pressure limiting cartridges, four capacity cage assemblies, extra gaskets, and metal specification tags to attach to the capillary tubing.

Superheat adjustment of the Thermo-Limit is external, and does not in any way affect the pressure limit setting of the cartridge. The strainer is built-in and is as easy to service as the other interchangeable parts.



Alco "Thermo-Limit"

motor during the starting or "pull-down" period. In addition to the reduction of general strain and wear on the system, and less likelihood of burned-out motors, in many cases smaller and less expensive condensing equipment can be installed.

The heart of the Thermo-Limit valve is a small assembly known as the pressure limiting "cartridge." It consists of a pressure-charged

Hose Couplings

ANNOUNCEMENT is made by Resistoflex Corporation, Belleville, N. J., of a complete line of patented attachable-detachable reusable metal couplings, which now make it possible to hand-assemble flexible hose lines. These two-piece safety-seal couplings were developed by Resistoflex, whose factory-assembled compar-lined hose assemblies are original equipment in air, oil and fuel lines of cars, trucks, buses, tractors, vessels and aircraft. Combined with any flexible hose—preferably with com-



Safety seal coupling

par-lined gas-oil hose because it is impervious to gasoline, organic solvents and oil—these reusable couplings properly attached can be trusted never to let go or vibrate loose. They are easily and quickly attached or detached and can be used over and over again, with end-wrench assembly done on the spot.

The coupling nut threads onto the hose, with coupling shell compressing the hose end into a safety-seal gasket. With keep true threads, the fitting has a long even grip on the hose, the double bell shape of nut allowing hose to flex without cutting. The heavy body of the fitting prevents crushing or distorting of the line. Unusually large square wrench surfaces make assembly operation simple and quick.

Germicidal Lamp

SANILITE, a new germicidal lamp designed for butcher store refrigerators and showcases, is being marketed by the Sanilite Company. Outstanding feature of the new unit is its absolute immunity to moisture. The ends of the lamp and the ends of the stainless steel tubes which carry the wires from one end of the lamp to the other are

"Show-Pieces"



of Modern Refrigeration . . .

A part of the PEERLESS line of dependable products for the refrigeration field are these handsome ice cube makers made in styles and capacities for every commercial use. Large volume freezing is accomplished in the shortest possible time by PEERLESS Faster Freeze Cube Makers through installation of continuous refrigerant tubes in each shelf. The range of unit sizes and tray types will equip either standard or special fixtures. Engineering of the superior quality that marks all PEERLESS products is YOUR assurance of superior performance.



PEERLESS
of AMERICA, Inc.

EXECUTIVE AND GENERAL SALES OFFICES

333 N. Michigan Avenue
Chicago 1, Illinois, U. S. A.

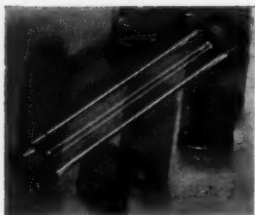


SOLD THROUGH LEADING REFRIGERATION
SUPPLY WHOLESALERS

SERVICE ENGINEER

69

May, 1946



Sanilite lamps

held in fixtures molded from a Durez phenolic plastic. One of these fixtures contains a

Permagrip Fasteners

SCHAEFER PERMAGRIP ENTERPRISES, Cleveland, Ohio, announces the new Permagrip fastener, a research development for improvement of refrigerator construction.

The development involves a method of construction which, it is claimed by the manufacturer, provides proper provision for the unequal

miniature transformer—the other, the automatic starting mechanism. Both fixtures are packed with a nonhygroscopic dielectric material in which the electrical parts are embedded. The resulting unit is absolutely water and moisture-proof and noncorrosive.

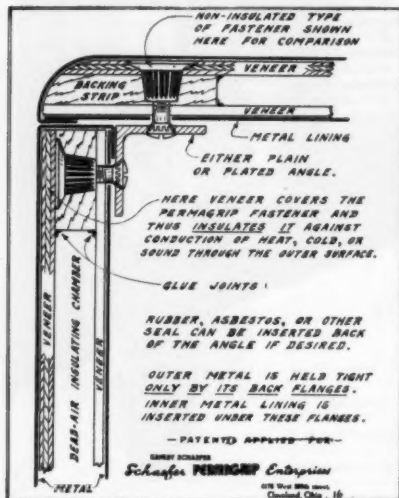
The manufacturer states that the ultraviolet rays emitted by the lamp prevent slime and mold from forming on meats. Odors are eliminated and coolers may be operated at substantially higher temperatures thus reducing both meat shrinkage and cooler operating expenses.

materials. The new means of assembly provide exceptional structural-strength with very few fastenings (they may be spaced as much as 1 to 1½ ft. apart). The fasteners hold the structure together with vise-like security, and also make it possible to take the sections apart without doing any damage. No complicated tools. No involved equipment. No special skill required.

The insulated fastener reduces the tendency to transmit temperature; or sound through the outer metal surface. An important item in refrigeration, in fireproofing, in acoustic panelling, etc.

While the drawing shows one type of treatment, construction details may vary to suit special conditions. Walls for instance may be made any desired composition, or thickness, or combination.

Numerous parallel rows of "dead-air" insulating chambers can be provided to maintain the desired degree of cabinet-insulation indefinitely. The separating layers can be either thin veneer plywood, fibrous paper, tinfoil, Alfol, or of other similar materials.

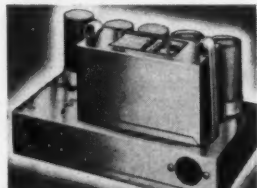


Construction details using fasteners

thermal coefficients of the metal and wood. While the same concealed fastener holds both materials, it holds them independent of each other. It does not extend through both

D-C Converter

SPECIAL d-c motors need no longer be installed in refrigerators operated from



A new converter

d-c power lines. The Electronic Laboratories, Inc., of Indianapolis, have developed a new vibrator inverter, Model 2113A, which operates a ½ horsepower 115 volt a-c motor from a 115 d-c line.

Terminal Leaks Solved

SINCE the inception of Sealed Units—one of the major problems confronted by Refrigeration Service Engineers was the repairing of Terminal leaks.

What has heretofore been the method of repairing involved expensive equipment, long hours of labor, questionable results.

The new Wagner replacement Terminal revolutionizes the procedure, saves time, labor, no required equipment. This device simply screws over the original terminal parts sealing all ceramic leaks instantly and permanently.

Oasis Water Cooler

THE Ebco Manufacturing Co. of Columbus, Ohio, in announcing the new Oasis Electric Water Cooler states, "During the war it became very evident to not only the war department, but also to



BLASTS OF COLD AIR!

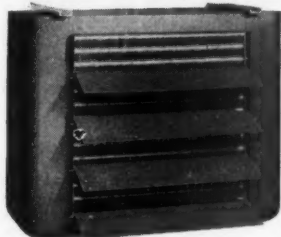
THE RIGHT
VOLUME OF COLD
AIR FOR EACH
PARTICULAR JOB



OVERHEAD BLOWER UNITS

for low temperature cooling

- HOUSING . . . Bonderized steel
- TUBES AND BENDS . . . Full area—no obstructions
- COILS . . . Tinned copper or seamless steel tubing
- SIDES AND BOTTOMS . . . Well insulated
- LOUVERS . . . Individually adjustable
- FANS . . . Proper size for the right air velocity
- MOTORS . . . Enclosed silent type.



Every feature of Rempe Overhead Blower Units for Low Temperature Cooling has been designed to provide most efficient refrigerating conditions.

Every part of this unit has been analyzed and checked for maximum trouble-free service to meet present day operating standards.

Write today for the **NEW COMPLETE ENGINEERING CATALOG** from which you can easily select the right unit for every job.

REMPE COMPANY

358 No. Sacramento Blvd., Chicago 12, Ill.

"CHEXIT"

PATENT PENDING

THE NEW

COLDSPOT BOHN

**CHECK VALVE REPLACEMENT
THAT WILL NOT LEAK**

**ONLY 5 MINUTES TO INSTALL
NO CUTTING OR FLARING
EASY TO INSTALL
INEXPENSIVE—GUARANTEED**

**ASK YOUR JOBBER TODAY
OR WRITE TO**

**R. ROBINSON, REFRIGERATION
425 VAN SICLEN AVE., BROOKLYN 7, N. Y.**

individual industries, that properly cooled drinking water was more essential to the efficiency of workers than ever before had been realized. As a result, many business organizations today are viewing electric water coolers in the light of a business machine just as important as a typewriter, an adding machine, etc.



Ebco Water Cooler

"As a pioneer in the water cooler field, the Ebco Manufacturing Company, recognizing this tremendous demand, has outdone their past endeavors in an attempt to make this new unit the finest and most practical cooler ever before offered on the market."

Features of the new cooler include a cabinet styled along modern lines and made of heavy gauge, galvanized and bonderized steel; a satin-finished stainless steel, splash-proof top; an angle-stream bubbler valve, self closing and automatic stream control; tin coated copper pressure tank and cooling unit and a hermetic condensing unit.

Tempscribe Recorders

THE Bacharach Industrial Instrument Company is now producing a new line of Tempscribe Recorders for room and atmosphere temperature, and electrical operation.

Features of these instruments include: Easy chart replacement—because pen and bi-metallic temperature element of temperature record-

er, and actuating mechanism of operation recorder, are in door. As shown in the illustration, when door is opened pen swings out of the way, permitting clear, unobstructed view of complete record, and easy chart replacement without danger of damaging pen mechanism. The 4" charts are self-centering.

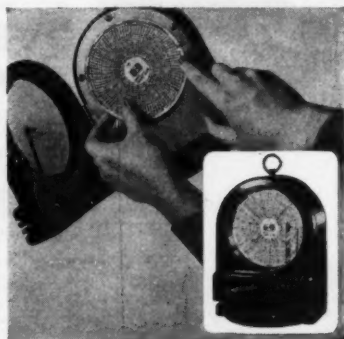
Complete interchangeability, since the recorder can be converted to any temperature range, or used as an operation recorder, by changing the door of the instrument.

Compact and self-contained: The instrument fits into a space 4½" x 5½" x 7½". A recess in the back of the recorder holds extra charts and ink bottle with dropper.

The bi-metallic temperature element of the temperature recorders is located in the front of the door to assure maximum sensitivity to quick temperature changes. The operation recorder can be hooked into the power line, or connected in parallel with the load.

Charts obtained with the temperature recorder show highest and lowest temperature during test period, duration of any temperature extreme, and spread and fre-

quency of temperature variation. Charts obtained with the operation recorder show starting and stopping time of the motor, intervals of cycling, and record of running time. This record indicates capacity of system utilized



Tempscribe Recorder

during test period. Recordings are made automatically.

The temperature recorder is available in the following standard time-temperature ranges: 24 hours, -10 to +50° F.; 24 hours, 30 to 60° F.; 24 hours, 40 to 100° F.; 24 hours, 70 to 130° F.; 24 hours, 60 to 90° F.; 8 hours, 60 to 90° F. Two types of operation recorders are standard: Type D with 24 hour movement, and Type C with 8 hour movement.

Window-type Cooler, Fan

THIS new 20-inch cooler fan, for window installation, designed by the Emerson Electric Mfg. Co., St. Louis, Mo., will provide rapid air circulation in small homes, apartments, tourist courts, small stores, shops, offices, etc. It will exhaust 3500 cubic feet of air per minute, in free air.

Easily, quickly installed, it is necessary merely to place two screw eyes in the window jamb, set the fan on the window sill, raise the window, plug in to a convenient outlet, and the fan is ready for operation.

Its many features include a capacitor motor for quiet, economical operation; blades are formed from sheet aluminum for large volume air delivery and quiet performance. Cabinet dimensions are 24"



Window Fan

wide x 9" deep x 24" high, suitable for mounting in any window.

Radial COOLER by KRAMER

- 1. SAVES SPACE**
Installed in mid-ceiling—occupies a minimum of overhead space.
- 2. EFFECTIVE AIR DISTRIBUTION**
Even discharge in all directions assures uniform temperature throughout the refrigerator.
- 3. CORRECTLY ENGINEERED**
Low discharge velocity • High relative humidity.
- 4. TOPS IN CONSTRUCTION**
All copper coil • Ball-bearing motor, totally enclosed.
REQUIRES NO OILING
Built-in Heat Exchanger • Silent fan • Bottom pan easily removable for free access to all parts.
- 5. ATTRACTIVE**
Two-tone crackle finish • Specially designed Venetian discharge Grille.



KRAMER TRENTON CO. Trenton, N. J.
COOLING COILS • EVAPORATORS
AND HEAT EXCHANGERS FOR REFRIGERATION

Send for Catalog R142-RS

NOW . . . PIPE JOINT COMPOUND in Stick Form

FOR ALL THOSE PIPE INSTALLATION AND
REPAIR JOBS—Always Ready for Instant Use

ECONOMICAL - HANDY - CLEAN

**NO MESS - NO BRUSH
NO WASTE**



TRADE MARK REG.
PATENTED

• Withstands Freon, methyl chloride, butane, propane and other refrigerants, oil, air, water, brine, etc.

• Lubricates and completely seals pipe joint threads, nuts, bolts, gaskets, turnbuckles, etc.

• Contains no lead. Contains no injurious ingredients.

ASK YOUR DEALER—OR WRITE US

COPY. 1946

Lake Chemical Co.

626 N. WESTERN AVE., CHICAGO 12, ILL.



**Note these
FEATURES**

ICEBERG APPOINTS NEW GENERAL SALES MANAGER

ROSS R. Smith, President of Iceberg Refrigerated Locker Systems Inc., today announced the appointment of Bloice C. Davison as General Sales Manager.

Mr. Davison formerly was sales manager for Westinghouse refrigeration engineer with Frigidaire, and a district manager for Universal Cooler.

His offices with Iceberg will be in the Empire State Building, New York City.



B. C. DAVISON

SIEGFRIED IN CHARGE OF SALES FOR SUPERIOR VALVE

J. S. FORBES, President of Superior Valve & Fittings Co., 1509 West Liberty Ave., Pittsburgh, Pa., announces that at the company's Board of Directors' meeting April 15, Willis A. Siegfried was elected to the office of Vice President in Charge of Sales from his former position of Sales Manager.

\$\$\$

LA CROSSE COOLER IN NEW QUARTERS

LA CROSSE COOLER CO., La Crosse, Wis., formerly known as La Crosse Novelty Box Mfg. Co., announce their removal to their new plant just completed at 2809 Losey Boulevard South, La Crosse, on April 22. The new plant, modern in every respect, will provide approximately 40,000 sq. ft. of production space.



FOUR VETERANS BACK ON THE JOB

At the Chicago City Sales Counter of the Harry Alter Company, refrigeration supply jobbers of Chicago and New York, four recently discharged Army veterans are now taking care of the company's Chicago customers. Pictured here, from left to right, are Steve Majeski, counter man, too old for the Army, but young enough to hustle out the customers' orders; Joe Holeb, recently discharged as a Captain of Field Artillery in the Pacific Theatre. Holeb is a counter man of some 12 years' with the company. Next is Ed Wodnickowski, just released from the Army, formerly Harry Alter Company Branch Manager. Next to him is Leonard Sostrin, who spent many months in the South Pacific, and who prior to the war was behind this self-same counter. To the right of him is Harold McClure, who returns from Army maintenance work.

GENUINE CARRENE No. 1 only Should Be Used In Grunow Refrigerators

● There's only *one* Carrene No. 1. No substitute will operate satisfactorily in Grunow Refrigerators. To prove to yourself—compare the weight of Carrene No. 1 with any other so-called competitive refrigerants. Moreover, you will find that Carrene No. 1 will cut your moisture problems.

● Remember, Grunow Authorized Service is the only authorized distributor of Carrene No. 1 for household refrigerators.

Grunow
AUTHORIZED SERVICE, INC.

FACTORY TESTED PARTS

4312 W. Fullerton Avenue, Chicago, Illinois



NOW!

FORGED FLARE NUTS AND FITTINGS

Ask your jobber for Details

Electromatic

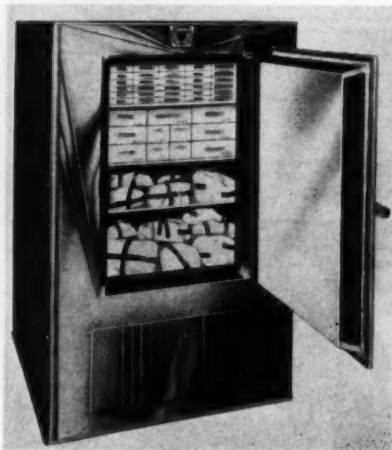
2100 INDIANA AVE. CHICAGO 16 ILLINOIS

ROBBINS-GREENWOOD TO REPRESENT HIGHSIDE

HIGHSIDE CHEMICALS CO., manufacturers of Thawzone and Trace, for the refrigeration trade announces the appointment of the Robbins-Greenwood Co., 3104 Main Street, Houston 4, Texas, as its sales representative in the states of Texas, Louisiana and Oklahoma.

ARCTIC-TEMP FREEZER

THE Arctic-Temp Manufacturing Company, large West Coast manufacturer of frozen food lockers, has appointed the Collins Refrigeration Company, 8983 Sunset Blvd., Los Angeles 46 and 51 Webster St., Oakland 7 as Pacific distributors of their Arctic-Temp Sub-Zero Lockers, according to M. S. Colin, president. Dealerships are being granted by the Collins Company and immediate, quantity deliveries of the popular units are being made.



Arctic-Temp Sub-Zero Locker

The cabinet is of stainless steel inside and out. It has a capacity of 20 cubic feet; holds more than 1000 pounds of frozen items. With the exception of the adjustable lower shelf, each shelf has direct conduction built-in copper coils. The smooth plate shelves can be scraped clean without defrosting. Degree selection is by finger-tip control. This unit is the first reach-in freezer equipped with a signal light for added food protection.

Striving for economy of operation, Arctic-

Temp engineers have developed an Econo-mizer in the unit. It allows immediate flooding of the coils for quick heat transfer from food to refrigerant without damage to the compressor.

Height 56 inches; width 46 inches; depth 28 inches; wall thickness 5 inches, packed with the new Dow Chemical Company "Styrofoam."

PENN ELECTRIC OPENS WEST COAST OFFICES

NEW factory branch sales offices have been opened by Penn Electric Switch Co. of Goshen, Indiana, in Los Angeles, Calif., Berkeley, Calif., and Seattle, Wash. In making the announcement, R. H. Luscombe, sales manager, stated, "Increased business activity on the West Coast coupled with Penn's policy of improving constantly its service to prospects and customers made this move advisable."



E. T. LAYPORT

W. H. KRACK

The Berkeley, Calif. office located in the American Trust Building at Shattuck Ave. and Center St. will be managed by Edward T. Layport. Before joining Penn, Layport, a graduate of Ohio State University, was an industrial engineer for Continental Can Co. in Chicago. Previous to that, he had had a long experience with Frigidaire and Kelvinator in both heating and refrigeration as a sales engineer.

The Los Angeles branch located at 1421 So. Broadway, will be managed by William H. Krack, who recently returned from overseas service as a Captain in the Field Artillery. Before joining the armed service, Krack was a sales engineer for Detroit Lubricator Co. in their New York office.

The third West Coast office located at 304 Westlake Square Bldg. in Seattle, Wash., will be managed by Meroy A. Anderson, who has recently returned after service

REPAIR AND SERVICE REFRIGERATORS—

- WIRING
- COPPER TUBING
- ELECTRODES, ETC.

with **IDEAL "THERMO-GRIP"** Electrically Operated **SOLDERING TOOLS**

More and more refrigerator repair men are turning out top servicing jobs with these versatile soldering tools, that are more than just ordinary soldering irons—they are handy electrical soldering tools designed to handle hard and soft soldering—soldering terminals, luqs, delicate wiring, spot soldering, soldering cop-



per tubing. Ideal for working in close quarters. IDEAL "Thermo-Grips" do a better job—quicker! The part touched heats almost instantly. Safe—no pre-heating or open flame hazard. Wide variety of attachments to choose from, for every kind of soldering work.

Write for Detailed Literature

PROMPT DELIVERY

Industrial Products Division

IDEAL

IDEAL INDUSTRIES, Inc.

(Successor to Ideal Commutator Dresser Co.)

1093 PARK AVENUE

SYCAMORE, ILLINOIS

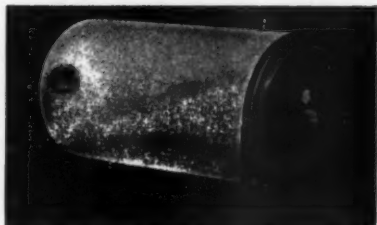
Sales Offices in All Principal Cities

NORMAL SUCTION PROCESS WATER COOLERS

6 to 25 gallon capacities.

Compact in design... can be mounted on floors, walls or ceilings.

Suitable for drinking water bubbler service, cafeteria or restaurant glass filler service.



DAY & NIGHT

COOLER DIVISION
DAY & NIGHT MFG. CO.

One of the Dresser Industries
MONROVIA, CALIFORNIA

NEW YORK

CHICAGO

A. C. Hammer, 682 B'way • Marc Shuster, 565 Wash. Blvd.

ST. LOUIS

DECATUR, GA.

B. H. Spangler, 1141 Market St. • J. E. Parker, 228 2nd St.



M. A. ANDERSON

H. D. GRAY

with the Navy as a Lieutenant Commander. From 1933 to 1940, when he left to join a government electronic laboratory in Washington, Anderson worked as an engineer in the Penn engineering department.

Gray Heads Milwaukee Office

R. H. Luscombe also announced the appointment of Harold D. Gray as manager of the company's Milwaukee branch office to succeed E. S. Kyle who has resigned.

Gray has been with the Penn company in the home office for many years and is well versed in the application of Penn controls for heating, refrigeration, air conditioning, pumps and air compressors as well as safety

controls for internal combustion engines. Penn's Milwaukee office is located at 1141 N. Van Buren Street and the telephone number is Broadway 5447.

§ § §

BOONE & SON AGENTS FOR HIGHSIDE

HIGHSIDE Chemicals Company, manufacturers of Thawzone and Trace, for the refrigeration trade, announces the appointment of Geo. I. Boone and Son, 1775 Broadway, New York City, as its northeastern representative in the New England states, New York, New Jersey, eastern Pennsylvania, Delaware, Maryland and the District of Columbia.

§ § §

STRIKE ENDS AT DOLE

DOLE Refrigerating Company, Chicago, manufacturers of Dole Vacuum Cold Plates, announced the return of their shop employees April 1st after a strike of almost eleven weeks. With the plant in full operation, every effort will be made to catch up on back orders as soon as possible, contingent on the availability of materials.

The company wishes to thank all their customers for their kind consideration and patient waiting.



Ansul Chemical Co., Marinette, Wis., held its first postwar refrigeration sales meeting Sunday, March 3, at the Stevens Hotel, Chicago. The all-day session included sales, advertising and credit subjects. Time out was taken to obtain the above picture.

Shown in this Ansul group are: standing (from left) Henry Gullatt, Atlanta office; Joe Moore, Kansas City; R. C. McNeely, advertising manager; Ralph Barry, assistant to Gullatt; Ray Polley, Fort Worth office; L. C. McKesson, sales director; Franklin Wedge, eastern manager; Tom Plouff, assistant sales manager; Elmer Billings, home office; Kenneth Covert, Paoli office; Clyde Broughton, credit manager; Lew Russell, Los Angeles office; Herman Goldberg, Chicago office.

Sitting (from left) R. C. Hood, secretary; Floyd Duvall, Indianapolis office; W. R. Rinelli, new products development; George Vermilye, sales manager; F. J. Hood, vice president; and H. V. Higley, president.



"FARTHEST NORTH" in Modern Refrigeration

Write for catalogs, engineering assistance, or a representative to call.

DOLE REFRIGERATING CO., 5910 N. PULASKI RD., CHICAGO 30, ILL.
N. Y. BRANCH, 103 PARK AVE., NEW YORK 17, N. Y.

TIME TELLS THE STORY...

Users everywhere praise the performance of Sanitary Quicfrez. And remember, thousands of Sanitary freezers were in use before Pearl Harbor.

BUILT BETTER TO LAST LONGER

SANITARY REFRIGERATOR COMPANY
FOND DU LAC, WISCONSIN

SANITARY
Quicfrez

ASRE SPRING MEETING

THE American Society of Refrigerating Engineers will hold its Spring Meeting June 2-5 in the Twin Cities, Minneapolis-St. Paul, with headquarters at the St. Paul Hotel. The Twin Cities Section of the ASRE will be the host of the convention and is arranging for a full program of technical sessions and entertainment, including sightseeing trips and fishing in the famous Minnesota lakes.

SUPPLY DISTRIBUTORS OF BOSTON CHANGES HANDS

CHAS. F. KOOPMAN JR. and Millard P. Koopman have purchased the entire holdings of Supply Distributors Corp., 167 Brighton Ave., Boston, Mass. The former owners and officers of this Corporation have no further financial interest in the company.

SDC will continue to operate as a wholesale jobber of refrigeration supplies and accessories, with a substantial increase in capital. Under new ownership, with larger operating facilities, rapid expansion of this business is expected.

Chas. F. and Millard P. Koopman are sole owners of the New England Steel Tank Co., located at 365 D. St. So. Boston. This business has been owned and operated by them since 1932.

ELECTRIC EQUIPMENT COMPANY ENTERS JOBBING FIELD

THE Electric Equipment Company, Washington, D. C., has announced their entry into the refrigeration parts jobbing field.

The company has been serving the refrigeration dealers in the electrical field for many years in sales and service for Delco, Wagner, and Emerson, and have one of the largest motor repair shops in the East.

In the refrigeration field they are distributors for Penn Electric Switch Company, General Controls, Tecumseh Products, Goodyear V-Belts, Virginia Smelting Company, Jas. P. March Corporation, Texaco Lubricants, Bonney Tools, and many other leading lines.

This will ultimately give Washington service men a one-stop location where they can buy a belt, pick up a control, or have a motor repaired. The Company occupies premises just outside of the business area, where ample parking is available.

DAY & NIGHT ANNOUNCES NEW SALES POLICY

THE Day & Night Manufacturing Co., has just announced its new postwar sales policy affecting the wholesalers and dealers of their equipment. This policy states in part:

1. We will sell through wholesalers on a non-exclusive basis.
2. We will sell component parts to unit manufacturers to be incorporated into their finished products only.
3. We will not sell direct to the dealer. All inquiries will be referred to Refrigeration Equipment Wholesalers.
4. We will be represented in the field by our own direct factory representatives.

WEATHERHEAD PERSONNEL CHANGES

ANNOUNCEMENT of the appointment of four divisional Sales Managers was made today by Heyliger Church, Vice President in charge of Sales, of The Weatherhead Company of Cleveland, Ohio.

J. A. Strachan has been made Sales Manager of the Original Equipment Division covering the sales of all products to original equipment manufacturers in the refrigeration, air conditioning, railroad, marine, chemical, food and beverage processing, and dairy equipment fields.

D. W. Holmes becomes Sales Manager of the Standard Parts Division covering all products sold through distributor channels.

T. V. Scott is the newly appointed Sales Manager of the Liquefied Petroleum Products Division covering these industries.

L. C. Doolittle heads up the Aviation Division as Sales Manager of all products to original equipment manufacturers in the Aviation, Machine Tool, Metals Processing, and Machinery Fields.

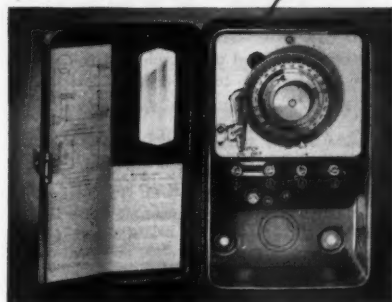
All will make their headquarters at Cleveland, Ohio.

"These changes are being made," Church said, "to effectively explore and exploit the sales possibilities of industrial fields heretofore uncultivated."



J. A. STRACHAN

**Defrosting
AUTOMATICALLY
CONTROLLED**



● BY PARAGON TIME SWITCHES

Why worry about defrosting? Here's a Switch that provides dependable time control for SHARP FREEZERS in all types of automatic defrosting . . . in locker plants, dairies, breweries, packing houses and commercial refrigeration. Regular defrosting increases efficiency and reduces operating costs.

The PARAGON LINE offers service proved . . . precision . . . quality Time Switches and Timers . . . rugged and durable . . . with a great performance record.

Paragon can produce Time Controls for any system such as Freon, brine, ammonia, etc., regardless of temperature and whether defrosting is done by hot vapor, electric heat or water spray. Put your defrosting problems up to Paragon engineers.

PARAGON ELECTRIC CO.
742 Old Colony Building
Chicago 5, Illinois

ALL MODELS *Teletchron*
MOTORED

Paragon *Chicago*

MAKERS OF ELECTRICAL EQUIPMENT



Some Men Just Don't (Won't or Can't) See —

CERTAINLY there are plenty of men in refrigeration who don't, won't or can't see any need for supplementing what they already know with U.E.I.

BALANCED TRAINING

Funny part of it is that these fellows do seem to get by somehow. BUT consider service and installation men—yes, even men in the sales, administrative, and executive jobs in refrigeration—who have not been content merely to get by! They have fortified themselves with training—the kind of practical, sensible U.E.I. training which for the past 20 years has been helping men get farther faster in practically every branch of refrigeration. How would you bet on them in 1946? Do you think they'll make more money than the boys who "know it all"?

The main point is this: If you sincerely believe you can make more headway in your refrigeration job or business with the help of more knowledge—knowledge which you can get through home study plus actual shop work—and if you are not wearing a set of blinders which keep you from seeing the whole picture of the future in refrigeration, we invite YOU to write for free FACTS about U.E.I. training.

MAIL THIS COUPON TODAY

UTILITIES

Dept. 45, 1314 W. Belden
Ave., Chicago 14, Ill.

Engineering Institute

Please give me more information about Refrigeration and Air Conditioning Training.

Name

Address

City State

HONEYWELL PURCHASES CANADIAN FACTORY

PURCHASE of a new plant which will triple Canadian manufacturing facilities is announced by Harold W. Sweatt, president of Minneapolis - Honeywell Regulator Company.

Located at Leaside on the outskirts of Toronto, the new factory, which was purchased from Small Electric Motors (Canada) Ltd., already is in production, and currently is employing 250 persons on the manufacturing and assembly lines.

Built at the beginning of the war for the production of gunsights and other fire control instruments for the Canadian, British and American navies, the plant was purchased complete with machine tools which, Mr. Sweatt said, are ideally suited for the manufacture of the company's line of heating, ventilating and air conditioning control instruments.



W. H. EVANS



Operation of this new plant in Toronto, Canada, has been started by Minneapolis-Honeywell Regulator Company.

The factory is located on approximately three acres of ground, and has a railroad siding and ample parking facilities for employees and visitors. It also will house sales and executive offices and serve as headquarters for all Canadian operations.

Under direction of W. H. Evans, general manager for Canadian operations, the new

plant will make and assemble the major share of all of Honeywell's controls for the Canadian market, Mr. Sweatt said. The recent purchase is part of the company's expansion plan announced late last year which will involve approximately \$4,000,000 upon completion and include additions to plants and machinery in Minneapolis, Chicago and Philadelphia, in addition to the recent move in Canada.

Manufacturing and sales operations formerly located at the company's older facilities at 117 Peter Street, Toronto, were terminated at the end of March and the transfer to the Leaside location fully completed.

C. C. ALLEN TO BE FIELD ENGINEER FOR HENRY VALVE

CHARLES C. ALLEN, recently discharged after serving as Chief Warrant Officer, U. S. Navy, is now a Field Engineer for the Henry Valve Company of Chicago, according to a recent announcement by Richard (Dick) Dawson, Vice President of Henry.



C. C. ALLEN

Mr. Allen attended the University of Dayton and the YMCA Technical College of Dayton. Before the war he was a refrigeration and air-conditioning service engineer for Frigidaire Division of General Motors and a field engineer for Alco Valve Co.

Mr. Allen will cover the Ohio territory, including adjacent parts of Pennsylvania, New York, Kentucky, and West Virginia.

NEW EBCO DISTRIBUTOR

THE Ebco Manufacturing Company, 401 West Town Street, Columbus 8, Ohio, announces the appointment of the Zia Electric Distributing Company, 202 East Marcy Street, Santa Fe, New Mexico, as distributor for the State of New Mexico on Oasis Electric Water Coolers.

The Zia firm maintains offices in Santa Fe and Albuquerque, New Mexico. The organization is headed by Mr. Leland Bannister, President, and Mr. F. C. Rand, Jr., Secretary and Treasurer.

HOW MANY METER-MISERS IN YOUR AREA "NEED GAS"?

*Have you been allowing
your competitor to get
all this Frigidaire serv-
ice because you have
had no refrigerant?*

Efficient service demands a stock of
replacement parts for immediate use.
Just as important is your supply of—



the IDEAL REPLACEMENT GAS

Meter-Miser Service is no different
than the servicing of other units of
similar design. . . . The main "bottle-
neck" has been in the supplying of
the original refrigerant. HERVEEN
makes efficient service and satisfac-
tory operation possible.

Send for our bulletin on "Procedure for
Recharging Meter-Misers with HERVEEN."

For deliveries, see your local jobber or write to

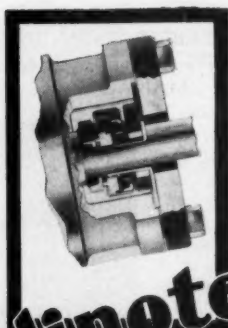
Modern Gas Co., Inc.

Manufacturers & Refiners

1084 BEDFORD AVE.

Brooklyn 5, New York

SERVICE ENGINEER



Arlington SHAFT SEALS

3 Exclusive Features

FLAT SEAL FACES



— Uniform — flat —
smooth — seal faces.

POSITIVE FLEXIBILITY

A diaphragm acting
synthetic rubber ring.
No sliding fit between a rubber
part and shaft or sleeve.



HIGH GRADE MATERIALS



High grade steel and
bronze of known wear-
ing quality are used for
the seal faces.

Ask your jobber about the

Arlington SHAFT SEAL

MODERN DESIGN PRODUCTS CO.

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MILLS REFRIGERATION DIVISION APPOINTS EASTERN BRANCH MANAGER

HARRISON J. HEDRICK, manager of the Refrigeration Division of Mills Industries, Incorporated, announces the appointment of Hillis Iams to the position of District Sales Manager, Refrigeration Division, Eastern Branch. Mr. Iams served with Mills as Field Engineer and District Sales Manager from 1936 to 1944. In 1945 he became President of the Supply Distributors Corporation, Boston, Mass. and recently left this position to re-join Mills Refrigeration Division.



HILLIS IAMs

DAVIS IN ADVERTISING FOR AIRO

APPOINTMENT OF W. L. Davis as Advertising Manager for Airo Supply Company of Chicago was announced March 30th by General Manager Leo Keeley.



W. L. DAVIS

For the past four years Mr. Davis has been associated with U. S. Army Ordnance, compiling various catalogs of ordnance material. Prior to that time he was catalog and advertising man for one of the largest optical houses in this country.

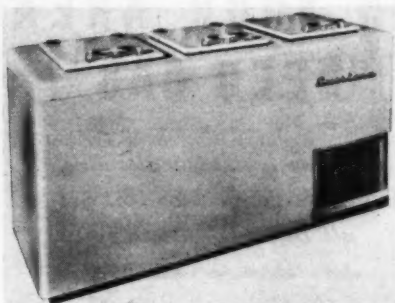
Mr. Davis's new duties will be directed toward the establishment of a new advertising and sales promotion policy at Airo.

AMERICAN FARM AND HOME FREEZERS IN PRODUCTION

DESPITE material shortages, delivery is being made on nearly all models of the American Farm and Home Freezer, according to R. W. Dreher, President, American Refrigerator & Machine, Inc., of Minneapolis.

Features of the American Freezer, model AR-15, include:

Dual-purpose freezing: 2½ cubic foot quick-freeze section for freezing at -10 to -20 degrees F; 12½ cubic foot Zero-Cold Storage section, for storing foods at 0 degrees F.



American Farm and Home Freezer Model AR-15

Extra large cold zones—belt liner or plate coils surround both quick-freeze and storage sections. Five-inch insulation all around, sealed and moisture-resistant.

Heavy-duty 1/3 horsepower compressor unit using Freon refrigerant; "fingertip" thermostatic control.

White refrigerator enamel baked finish outside; satin aluminum enamel interior finish. Cadmium hardware; attractive plastic handles on top-opening doors. Black, ventilated kick-plate.

The American Freezer is also made in 8, 22 and 30 cubic foot sizes, features of these models being essentially the same except for the size of the storage compartment.

Also in production are 6, 8, 10 and 12 cubic foot models of the Arid-Air Bottle Cooler, which are supplied either for remote installation or as complete units.

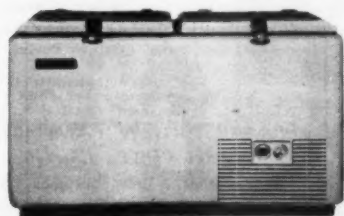
BOSWORTH OF G.E. RETIRES

HERBERT H. BOSWORTH, who joined General Electric in 1899 at the West Lynn Works, asked to be retired March 31, after 46 years of service with the Company.

Mr. Bosworth, a Yankee by birth, has been located also at G-E plants in Pittsfield, Schenectady, Fort Wayne, Chicago and Cleveland. During the last ten years, he has maintained headquarters at Nela Park, Cleveland, and, in 1939, he was appointed to take charge of the sale of all Appliance and

BEN-HUR

A NAME THAT STANDS
FOR **DEPENDABLE SERVICE**
AND **QUALITY IN FARM**
AND **HOME FREEZERS**



OFFERING THESE "STAR"
PERFORMANCE AND
VALUE FEATURES:

- ★ All Steel Construction —
- ★ Lifetime Laboratory Tested
- ★ All Food Completely Surrounded by COLD —
- ★ A Size and Capacity for Every Family Need
- ★ Extra Thick Insulation (Hermetically Sealed)
- ★ Smartly Modern in Design
- ★ Economy-Engineered for Long-Lasting Efficient Operation

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BEN-HUR FARM & HOME FREEZERS

SERVICE ENGINEER



• Aerovox motor-starting capacitor replacements are now available in both exact-duplicate and universal types to meet any standard requirement. Latest Aerovox catalog tells what capacitor to use for any standard capacitor-type motor. Meanwhile, your local supply house or jobber stocks Aerovox replacements for your convenience. • Ask for latest catalog—or write us direct.



FOR MOTOR STARTING AND
INDUSTRIAL APPLICATIONS

AEROVOX CORP., NEW BEDFORD, MASS., U.S.A.
Export: 13 E 47th St., New York 16, N.Y. • Cable: "ARLAB"
In Canada: AEROVOX CANADA LTD., Hamilton, Ont.

Merchandise Department products to utilities in the West.

His early training in the manufacturing, production, drafting and engineering departments provided a good background for sales work in later years.

It is interesting to note that Mr. Bosworth engineered the installation of the first ceiling fan in the New York City subway cars around 1910, and, in 1925, he sold at retail the first General Electric refrigerator built commercially for the domestic market.

In 1927, when the Refrigeration Department was organized, Mr. Bosworth was named manager of Central Station sales.

PIERCE & SCHOLL, SALES MANAGERS FOR LYNCH

R. L. SEARS, Sales Manager, Lynch Mfg. Corp. of Defiance and Toledo, Ohio, announces the appointment of two new Par district sales Managers, B. J. Scholl for the district of lower peninsula of Michigan, Indiana, Ohio, Pennsylvania, West Virginia, southern half of New Jersey, Maryland, Delaware, and D. C.; Cal Pierce for district No. 3 including Kentucky, Virginia, North and South Carolina, eastern Tennessee, Alabama, Georgia and Florida.



B. J. SCHOLL

CAL PIERCE

Mr. Scholl is well identified with the air compressor and commercial refrigeration business, having served over twenty-eight years with the Brunner Mfg. Co. of Utica, N. Y., several years of which as general sales Manager. He has been very active in Refrigeration Equipment Mfrs. Assn. serving as director and chairman of the condensing unit group, chairman of Standard Refrigeration Compressor Assn. and chairman of the Pneumatic Automotive Equipment Assn. During the war, he served these industries in important contact work with various departments in the nation's capital.

Cal Pierce, prior to the war, was a manufacturers agent, covering several eastern states handling Par air compressors and many other equipment lines. On Oct. 25, he completed three years and three months service with the U. S. Armed Services, and now has charge of all sales of Par Air Compressors and Par Refrigeration Equipment in his district.

BONNEY FORGE CATALOG

A NEW 20-page catalog (No. 46J) of tools has just been issued by Bonney Forge & Tool Works, Allentown, Pa. The catalog is intended for jobber salesmen, providing specifications, descriptions and illustrations of the tools manufactured by the company.

JAS. P. MARSH NEW PAMPHLET

JAS. P. MARSH CORP., Chicago, Ill., have just issued a new 20-page pamphlet illustrating and describing their line of gauges and thermometers for refrigeration service.

Included in the pamphlet are specifications and description of pressure gauges, compound gauges, corresponding temperature gauges, ammonia gauges, dial thermometers, and bi-metal dial thermometers. Copies of the pamphlet may be obtained by addressing the company at 2073 Southport Ave., Chicago 14, Illinois.

NEW REMPE BULLETIN

AN entirely new bulletin on overhead blowers for low temperature cooling has just been issued by Rempe Co., 340 N. Sacramento Blvd., Chicago 12, Illinois. It is available to any refrigeration executive or engineer, on request.

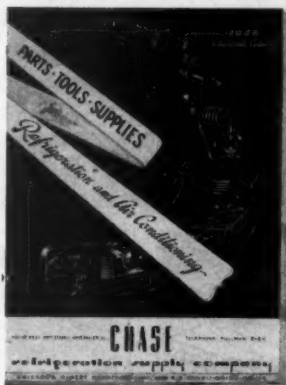
This new bulletin contains up-to-date, practical engineering information in easy to read tables. Valuable data such as—how to select the proper refrigerant—how to select type of coils—how to select unit for a specific room temperature—what blower to use for various sizes of refrigerators—recommended air velocities for specific products is given in detail—a wealth of information to aid in selecting the right blower for a specific installation.

Rempe blowers are now in production, and substantial shipments are being made. The new bulletin may be had for the asking by addressing the manufacturer.

IT'S NEW—IT'S THE LATEST—IT'S FOR YOU!

Send For Your Copy of This BIG, NEW Catalog

- ★ 112 Pages
- ★ Clear, Easy-to-Read Type
- ★ New Products
- ★ Latest Prices
- ★ Complete Product Specifications



- ★ 1870 Illustrations
- ★ Printed on the Finest Paper Obtainable
- ★ Quick Reference Index
- ★ List Prices

The demand for this new Catalog has exceeded our expectations. The supply is limited—send for your copy now.

Reserved exclusively for the Wholesale Trade. Please send proper identification with your request.

Member Refrigeration Equipment Wholesalers Association

CHASE refrigeration supply co. NOT INC.
546 WEST 119TH ST., CHICAGO 28, ILL. — Phone PULman 5125

Your BIGGEST Dryer Value!

**STURDY
STEEL CON-
STRUCTION**



**IMPROVED
MODERN
DESIGN**

- ✓ One-Piece, Spun Steel Body. Withstands Highest Pressures and Roughest Handling.
- ✓ No Soldered or Brazed joints to leak.
- ✓ Costs No More Than Other Dehydrators.
- ✓ Wide Range of Capacities—From 5 to 50 Cu. Inches.
- ✓ Both Ends Removable for "Ram Rod" Cleaning.
- ✓ Large Hexagon Adapters Provide Firm Wrench Hold When Refilling.

Insist on the best—Insist on "Rapid." Your Wholesaler can supply you.

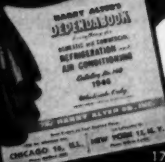
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711 W. LAKE ST.



CHICAGO 6, ILLINOIS

*Refrigeration
Parts and Supplies*



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FOR **1946**

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to Serve You

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HASCOCO, INC.
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HASCOBILT
Parts
for Conventional and
Hermetic Type Compressors

*Packed in Special
Cardboard Boxes or Containers*

Offers (1) Complete inventory record.
(2) Part numbers always visible. (3) Easily
stored in bins or on shelves.

Write for illustrated catalog and price list.

HASCO, INC.
GREENSBORO, N. C.

CONTROL REPAIR SERVICE

Power elements and domestic
controls reconditioned equal to
new at a small cost. All work
guaranteed for one year. Prices
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United Speedometer Repair Co.
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Our 1946 Catalog of
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For Immediate Delivery
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It's the PLUS Value that Counts!

• Full value of a product is not always
reflected in the quality of that product
or the price paid.

Plus Value is made up of a lot of little
things. Things like courteous treat-
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antee of satisfaction—and the feeling
your business is *wanted* and *appre-*
ciated.

These are the hidden values that count
... they are the hidden values that go
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BUILT COLD STORAGE DOORS
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BRANCHES IN PRINCIPAL CITIES

Says
GASKET JOE

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THE SCORE
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Refrigerator coils, air cooled condensers, evaporators, dehydrators and low side floats expertly repaired and thoroughly cleaned.

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VISOLEAK detects even the smallest leaks before they cause damage to expensive refrigeration systems. Years of use prove it safe, economical, easy to use.

NEW CHARGING SET

The VISOLEAK Charging Set was developed to inject VISOLEAK, add refrigerant oil, or recharge sealed units. For use on all types of refrigeration systems without danger of introducing air or foreign matter.

Charging Set—complete with hoses. \$7.50
Filler only—without hoses. 6.00

WHOLESALE PRICES

4 ounce bottle. \$ **1.00**
8 ounce bottle. **1.75**
1 pint bottle... **3.00**
1 quart bottle. **5.00**
1 gallon can... **16.00**

CASE LOTS

48 bottles
24 bottles
24 bottles
12 bottles
6 cans

SAVE 10% ON CASE LOTS

See your refrigeration supply jobber or write for complete information.

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We have available "REFRIGERATION SERVICE MEN" trained in our school shops and laboratories. Resident Students only. These men have a sound technical and practical knowledge of refrigeration.

Approved
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BESTOLIFE LEAD SEAL JOINT SEALING AND ANTI-SEIZE PIPE JOINT COMPOUND

'BESTOLIFE has been used successfully in the Refrigeration Industry for years.

'BESTOLIFE is non-corrosive and non-expanding. It takes the place of litharge and glycerine. Does not harden or dry out. Protects threads, keeps pipe joints tight yet easily broken apart.

Prove 'BESTOLIFE'S efficiency for yourself. Trial 1 1/4 pound can sent anywhere in the U. S. for \$1.00. This charge cancelled if not entirely satisfactory.

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SERVICE MEN: Don't Bother to Reface Frigidaire L/S Floats



USE ACME REPLACEMENT SEATS.

Accepted as correct and used by largest Company in the World. Ask your Jobber or write for Sample.

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One year guarantee

**Cold Controls • Pressure Switches
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Look and Work Like New Controls
Original Factory Specifications

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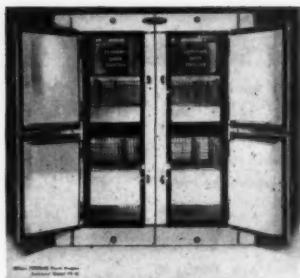
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There is a ZEROSAFE size for EVERY need. Self-Contained Models are of 15 and 25 cu. ft. capacities; Sectional Models, from 22 cu. ft. to 120 cu. ft. Model illustrated is FF-44.

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DELAWARE

CONTROLS—VALVES REPAIRED OR EXCHANGED

We completely disassemble controls, clean, test, check and replace defective or broken parts, and set for proper temperatures.

Domestic Cold Controls (Modern).....	\$2.50
Commercial Controls (Pres. or Temp.)....	2.75
Automatic Expansion Valves.....	1.75
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90 day guarantee ★ Prices F.O.B. Chicago

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Immediate delivery on a replacement schedule for over 125 compressors. Shipment of a replacement compressor can be made the same day yours is received. Most standard models available for this service.

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We do not repair hermetic units.

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SERVICE PARTS COMPANY

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You Buy One Tool

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ALL "JUSTRITE"

This Justrite Refrigerant Gas Leak Detector gives you three tools for the price of one.

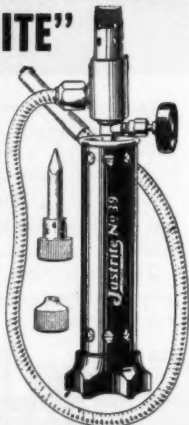
1. A gas leak detector for systems using Carrene, Freon and other non-combustible Halide gases.
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Tool is quickly convertible. All parts built of finest material. Uses white gasoline, benzine or naphtha.

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COLD CONTROLS & EXPANSION VALVES

repaired or exchanged

at the following prices, F.O.B. Chicago

Automatic Expansion Valves (All Makes)	\$1.75
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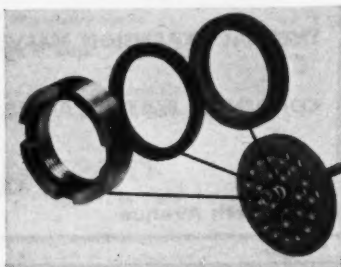
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